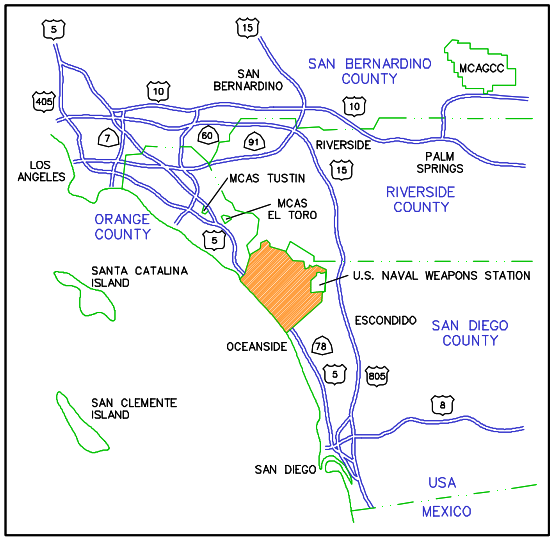
Final
Site Assessment Report
For Former Underground Storage Tank Site 1294
at Marine Corps Base Camp Pendleton



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CONTRACT NUMBER: N68711-01-D-6016
TASK ORDER: 003

by

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November 2005

FINAL

SITE ASSESSMENT REPORT
FOR FORMER UNDERGROUND STORAGE TANK
SITE 1294
AT MARINE CORPS BASE CAMP PENDLETON

Contract No. N68711-01-D-6016
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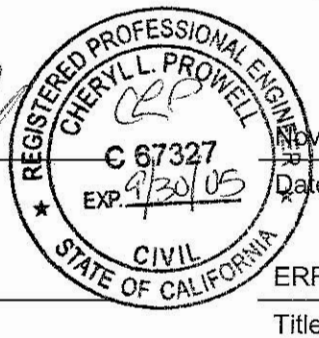

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David Clexton, R.G.	Battelle Project Manager
Name	Title

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ACRONYMS AND ABBREVIATIONS

amsl	above mean sea level
APCL	Applied Physics & Chemistry Laboratories
bgs	below ground surface
btoc	below top of casing
cm/s	centimeters per second
CSWRCB	California State Water Resources Control Board
DEH	(San Diego County) Department of Environmental Health
DIPE	di-isopropyl ether
DO	dissolved oxygen
ERRG	Engineering/Remediation Resources Group, Inc.
ETBE	ethyl-*tert*-butyl ether
FID	flame ionization detector
ft	feet
GC	gas chromatograph(y)
GC/MS	gas chromatography/mass spectrometry
ID	identification
IDW	investigation-derived waste(s)
L	liter
LCS	laboratory control sample(s)
lpm	liters per minute
LUFT	leaking underground fuel tank
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCL	maximum contaminant level
MDL	method detection limit
µg/L	micrgrams per liter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MS	matrix spike(s)
MSD	matrix spike duplicate(s)
MW	monitoring well
N/A	not applicable
NA	not analyzed
NAD	North American Datum
ND	not detected
NFESC	Naval Facilities Engineering Service Center
NPWC	Navy Public Works Center
ORP	oxidation-reduction potential

PCB	polychlorinated biphenyls
PAH	polynuclear aromatic hydrocarbon
PQL	practical quantitation limit
PRG	Preliminary Remediation Goal
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QC	quality control
RPM	Remedial Project Manager
RWQCB	Regional Water Quality Control Board, San Diego Region
SAM	Site Assessment and Mitigation
SAR	Site Assessment Report
SB	soil boring
SPLP	Synthetic Precipitation Leaching Procedure
SWDIV	Southwest Division Naval Facilities Engineering Command
TAME	*tert*-amyl-methyl ether
TBA	*tert*-butyl alcohol
TOT	taste and odor threshold
TPH-D	total petroleum hydrocarbons quantified as diesel
TPH-E	total petroleum hydrocarbons extractable
TPH-G	total petroleum hydrocarbons quantified as gasoline
TPH-MO	total petroleum hydrocarbons quantified as motor oil
TRPH	total recoverable petroleum hydrocarbons
U.S. EPA	United States Environmental Protection Agency
UST	underground storage tank
VOA	volatile organic analysis
VOC	volatile organic compound

Section 1.0: INTRODUCTION

This Site Assessment Report (SAR) was prepared by Battelle Memorial Institute (Battelle) and Engineering/Remediation Resources Group, Inc. (ERRG) for Naval Facilities Engineering Command Southwest Division (NAVFACSW), and Marine Corps Base (MCB) Camp Pendleton under Contract No. N68711-01-D-6016, Task Order No. 0003. This task order requires ERRG and Battelle to perform site assessments at three petroleum-contaminated former underground storage tank (UST) sites located at MCB Camp Pendleton within Areas 12 and 13.

This SAR was prepared following the guidelines of the San Diego County Department of Environmental Health (DEH) *Site Assessment and Mitigation (SAM) Manual* (DEH, 2004). The report includes descriptions of the assessment activities conducted (including permitting and pre-drilling preparation, borehole drilling and well installation, and soil and groundwater sampling and analyses), results from the investigation conducted at Site 1294, a description of post-drilling activities, such as surveying and waste-handling procedures, and recommendations for future site activities. For a detailed description of the procedures followed during the field activities conducted at Site 1294, the sampling and analysis plan prepared for this work, and the health and safety plan adhered to during field activities, please refer to the *Final Work Plan for Characterization of Underground Storage Tank Sites in Areas 12 and 13 at Marine Corps Base Camp Pendleton* (ERRG and Battelle, 2004).

This report includes six appendices labeled Appendix A through Appendix F. Appendix A contains the lithologic logs and groundwater monitoring well (MW) completion diagrams for all soil borings drilled and groundwater monitoring wells installed at Site 1294. Appendix B contains laboratory analytical reports, chain-of-custody documentation, and laboratory quality assurance/quality control (QA/QC) data including third-party data validation. Appendix C provides the groundwater well development logs and the well purge logs associated with groundwater sampling activities. Appendices D, E, and F contain the soil boring and well installation permits, survey reports, and manifests associated with the transport and disposal of all investigation-derived wastes (IDW), respectively.

1.1 Objective of the Investigation

The objective of this task was to collect the data required to delineate the lateral and vertical extent of the hydrocarbon constituents present in the subsurface soils and groundwater surrounding the former UST location at Site 1294. The objective was accomplished using the available site data and additional data collected using the procedures described within this report.

1.2 Site Identification Data

Site Address:	Site 1294, MCB Camp Pendleton
Facility Name:	Vehicle Maintenance Ramp
DEH Case No.:	H05939-128
RWQCB Release No.:	9UT2841
Property Owner:	U.S. Marine Corps
Tank Owner:	U.S. Marine Corps
Tank Operator:	U.S. Marine Corps
MCB Camp Pendleton Contact:	Mr. Chet Storrs, Assistant Chief of Staff Environmental Security (AC/S ES), Bldg. 22165 Camp Pendleton, CA 92055-5008 (760) 725-9774

Remedial Project Manager (RPM):	Mr. Bipin Patel, NAVFACSW, Code OPCE.BP 1220 Pacific Highway San Diego, CA 92132-5190 (619) 532-4814
Responsible Party:	U.S. Marine Corps.

1.3 Site Description

Site 1294, which consists of Building 1294 and the region beneath and surrounding former UST 1294, is located within MCB Camp Pendleton Area 12 on Vandegrift Road. Figures 1 and 2 show the location of Site 1294 within MCB Camp Pendleton. Prior to removal on July 8, 1994, Site 1294 contained one steel tank of unknown capacity. The UST is assumed to have been used to store waste oil generated from vehicle maintenance performed at the adjacent vehicle maintenance ramp. The UST excavation dimensions were 5 feet (ft) by 7 ft and approximately 5 ft in depth. It was reported that soil discoloration and excavation odors were noted during the tank removal. Following these activities, the excavation was backfilled with the soil that had previously been removed, as well as with clean fill material to fill the volume of the area previously occupied by the UST. Figure 5 illustrates the location of the former UST excavation, the excavation soil samples, and the former UST. The information presented above was obtained from the Navy Public Works Center (NPWC, 1994).

1.3.1 Site Use. Site 1294 is currently used as an auto organization facility comprised primarily of a large asphalt parking lot with several old storage buildings and a concrete vehicle maintenance ramp. The vehicle maintenance ramp does not appear to be in use at this time.

1.3.2 Topography. Site 1294 is located in the transition zone between the inland valleys and eastern slope of the coastal mountains within the Camp Pendleton Mainside area. The site itself is relatively flat with a slight grade to the south.

1.3.3 Surface Hydrology. Four major stream/river valleys occur in the Camp Pendleton area: the San Mateo Creek valley, the San Onofre Creek valley, the Las Flores Creek valley, and the Santa Margarita River valley. All four valleys contain Upper Pleistocene- to Holocene-aged unnamed alluvial deposits that extend into the associated inland valleys (Odermatt and Anderson, 1994; Palmer, 1994). Tributaries and smaller streams located on Base include Talega Creek, the north and south forks of San Onofre Creek, Aliso Creek, De Luz Creek, Windmill Canyon Creek, and Pilgrim Creek.

According to the *Water Quality Control Plan for the San Diego Basin* (RWQCB, 1998), Site 1294 is located within the Mission Hydrologic Subarea of the Lower San Luis Hydrologic Area within the San Luis Rey Hydrologic Unit. The site is located approximately 2,500 ft to the west of Pilgrim Creek, which is a tributary of the San Luis Rey River.

1.3.4 Geology. Camp Pendleton is situated in the Peninsular Ranges Geomorphic Province. To the east, the province is bounded by mountain ranges (Peninsular Ranges) that separate the Colorado Desert Geomorphic Province from this province. To the west, the province is bounded by the coastline and the Newport-Inglewood-Rose Canyon fault zone. The Peninsular Ranges are a northwest- to southeast-oriented complex of fault-bounded blocks (Norris and Webb, 1990). Uplift and westward tilting of these blocks has resulted in a mountain chain more than 600 miles in length, with a steep eastern escarpment and a relatively gentle western slope extending to the coastal plain. Geomorphic characteristics found in the province include mountain slopes, foothills, inland valleys, coastal valleys, coastal slopes, and coastal plains. The stratigraphy within Camp Pendleton varies from east to west. The eastern Base area is mountainous, containing a complex of Cretaceous-aged igneous intrusive and

extrusive rocks that intrude and overlie the Jurassic-aged sedimentary rocks of the Bedford Canyon Formation. An Upper Cretaceous-aged marine conglomerate occurs in the more westerly mountain slopes and foothills. The Upper Cretaceous-aged Williams Formation occupies the foothills and inland valleys to the west of the eastern mountain range and may conformably overlie the Bedford Canyon Formation in the inaccessible artillery impact area. The Williams Formation is composed of interbedded sandstone, siltstone, and mudstone (Figure 3).

In the transition zone between the inland valleys and eastern slope of the coastal mountains, the Middle Eocene-aged Santiago Formation unconformably overlies the Williams Formation and an intermittent paleosol developed on it. The Santiago Formation consists of three members primarily composed of interbedded sandstone, silty sandstone, and mudstone. The Middle Miocene-aged San Onofre Breccia unconformably overlies the Santiago Formation and forms the backbone of the coastal San Onofre Mountains. The San Onofre Breccia consists of an overall coarsening-upward sequence of coarse sandstone to pebble and boulder breccia.

The coastal slope is occupied with relatively small, near-shore exposures of the overlying Upper Miocene-aged Monterey Formation, Lower Pliocene-aged Capistrano Formation, and assorted Pleistocene-aged terrace deposits. The Monterey Formation consists of a fining-upward sequence of conglomerate, coarse sandstone, siltstone, and siliceous shale. The Capistrano Formation (San Mateo Member) consists of a tan, coarse-grained, locally pebbly, massive, well-indurated arkose. The Pleistocene-aged terrace deposits consist of marine and nonmarine sediments that unconformably overlie older stratigraphic units and consist of brown, medium-grained sandstone to pebble and cobble conglomerate (Brown and Caldwell, 1996; Cranham et al., 1994).

The near surface geology at Site 1294 consists primarily of a fill layer generally situated between 0-6 ft bgs. The fill material is typically underlain by clayey silt with varying amounts of sand and clay. A sand layer was also observed in several site borings with varying amounts of fines. These lithologies are of the Middle-Eocene Santiago Formation.

1.3.5 Hydrogeology. Groundwater occurs primarily within four valleys that form the groundwater basins within Camp Pendleton: the San Onofre basin, the San Mateo basin, the Las Flores basin, and the Santa Margarita basin (Figure 4). These areas are associated with surficial watersheds, and contain active streams overlying alluvial and fluvial deposits that generally consist of locally derived clay, silt, sand, gravel, and cobbles. The valley-fill deposits located in these areas provide a prolific source of groundwater and, paradoxically, are characterized by a relatively level topography. Both of these qualities make the deposits desirable areas for the siting of support activities (i.e., Base housing, equipment maintenance/servicing areas, fuel stations, and the Marine Corps Air Station [MCAS]). Groundwater generally occurs at relatively shallow depths (10 to 30 ft below ground surface [bgs]) and under unconfined conditions in these locations, which are limited to the area surrounding the associated surface streams and comprise a relatively small area of the Base. The Base obtains potable water for distribution from these basins. It has been reported that groundwater occurs within a deeper, semiconfined alluvial aquifer that is separated from the shallow, unconfined alluvial aquifers on the Base by a confining layer of silt and clay. It is from this deeper, semiconfined alluvial aquifer that the Base withdraws water for supply purposes. Groundwater also occurs in the uplands, but only in localized lenses that are inferred to be perched above the unconfined and semiconfined aquifers located in the groundwater basins in the valleys.

Groundwater was initially encountered at Site 1294 at approximately 3 to 5 ft bgs (287 to 285 ft above mean sea level [amsl]). Section 2.2 contains detailed descriptions of the groundwater conditions observed at this site. According to the *Water Quality Control Plan for the San Diego Basin* (RWQCB, 1998), Site 1294 is located within the Mission Hydrologic Subarea of the Lower San Luis Hydrologic Area within the San Luis Rey Hydrologic Unit. Groundwater in this area has supply uses beneficial to

municipal and domestic supply, agricultural supply, and industrial service supply. However, no groundwater supply wells are located within 1 mile of the site. Additionally, groundwater beneath the site is found in the Santiago Formation which has a relatively low transmissivity and hydraulic conductivity, which ranges from 10^{-2} to 10^{-7} centimeters per second (cm/s) in the sand units and 10^{-7} to 10^{-10} cm/s in the silt and clay units (IT Corp., 1993). The nearest downgradient water supply well is located approximately 6 miles southwest of the site adjacent to the San Luis Rey River, which serves the City of Oceanside.

1.4 Previous Investigations

Following UST removal, a SAM inspector directed soil sampling activities at Site 1294. Two soil samples (1294-1-7.5 and 1294-2-8) were collected from the bottom of the tank excavation. Samples were analyzed for total petroleum hydrocarbons quantified as gasoline (TPH-G) and total petroleum hydrocarbons quantified as diesel (TPH-D) using United States Environmental Protection Agency (U.S. EPA) Method 8015 Modified, and for total recoverable petroleum hydrocarbons (TRPH) using U.S. EPA Method 418.1. Following acquisition, the soil samples were analyzed by Superior Precision Analytical, Inc., in Seattle, Washington.

Based on analytical results, TPH-D concentrations in the excavation samples ranged from below the detection limit (not detected [ND]) to 36 milligrams per kilogram (mg/kg). No TPH-G concentrations were detected in the excavation samples. TRPH concentrations in the excavation samples ranged from 10 mg/kg to 640 mg/kg.

Based on final results from the soil samples collected during the UST removal operations, the SAM Division, County of San Diego, determined that the site required further action.

Section 2.0: SUMMARY OF INVESTIGATION

The primary objective of the site assessment at Site 1294 was to delineate the lateral and vertical extent of hydrocarbon constituents in the soil and groundwater. Additional objectives of this investigation included characterizing the lithology in the vadose zone and the uppermost portion of the saturated zone, evaluating the site data, and providing recommendations for future site activities. The following sections describe the activities performed to achieve the investigation objectives.

2.1 Pre-Drilling Activities

All boring locations, as well as the general area surrounding the boring locations, were checked for underground utilities prior to drilling. Southwest Geophysics, a private subcontractor, was contracted to use geophysical methods to determine utility locations within the area under investigation. Permits were obtained from the San Diego County DEH for installation of soil borings and groundwater monitoring wells at Site 1294.

2.2 Drilling and Sampling

Five soil borings (SBs) were advanced at Site 1294 from March 18 to March 31, 2005 and labeled 1294-SB01, 1294-SB02, 1294-SB03, 1294-SB04, and 1294-SB05. The soil borings were positioned within and surrounding the former location of UST 1294. Figure 6 illustrates soil boring locations advanced as part of this task in relation to the former location of UST 1294. All soil borings were advanced to a depth of 30 ft bgs, with the exception of 1294-SB05 which was advanced to 35 ft bgs to compensate for a difference in elevation relative to the other four borings advanced as part of this investigation. Groundwater recharge into site borings was relatively fast and typically equilibrated within one day. Initial static groundwater depths observed in each soil boring ranged from 2 to 3 ft bgs. Three groundwater monitoring wells were subsequently installed in borings 1294-SB01, 1294-SB02, and 1294-SB03. Due to the shallow depth of the groundwater at this site, a modified well construction was required to allow placement of the well screen across the groundwater table while allowing for the installation of an adequate surface seal and well vault. The modified well construction was designed in consultation with the County of San Diego DEH staff (Spangenberg, personal communication, 2005).

Groundwater wells 1294-MW01, 1294-MW02, and 1294-MW03 were strategically located within the source area, cross-gradient of the source area, and downgradient of the source area, respectively. Additionally, these locations were selected in an attempt to avoid site obstructions; specifically, the location of well 1294-MW03 was influenced by the presence of the concrete vehicle maintenance ramp located adjacent to the former UST excavation to the north (Figure 6). Groundwater monitoring well installation is further described in Section 2.3.

Soil samples were collected from each soil boring at 5-foot intervals using a split-spoon sampler. Headspace measurements from samples were taken by allowing the soil cuttings contained in the cutting shoe of the split-spoon sampler to warm up in a sealed plastic bag and then the resulting vapors were analyzed using a flame ionization detector (FID). All soil samples subsequently were sent to Applied Physics & Chemistry Laboratories (APCL) in Chino, CA, for analyses of total petroleum hydrocarbons-extractable (TPH-E). Selected soil samples also were analyzed for volatile organic compounds (VOCs), Title 22 Metals, polychlorinated biphenyls (PCBs), organic lead, Synthetic Precipitation Leaching Procedure (SPLP) for VOCs, and SPLP for PCBs. APCL is a California-certified and Navy-approved stationary analytical laboratory.

Following the site investigation, boreholes not used for the installation of groundwater monitoring wells were abandoned using a bentonite grout slurry in accordance with the guidelines presented in the San Diego County *SAM Manual* (DEH, 2004). A local subcontractor, Gibson Surveying, subsequently surveyed all borehole locations according to the North American Datum (NAD) 83 coordinate system. IDW generated during the site assessment was removed from the site and disposed of by EFR Environmental Services. Refer to the *Final Work Plan for Characterization of Underground Storage Tank Sites in Areas 12 and 13 at Marine Corps Base Camp Pendleton* (ERRG and Battelle, 2004) for a complete description of all drilling and sampling procedures, as well as information regarding equipment decontamination, surveying, and waste-handling procedures. Lithologic logs and well completion diagrams from the boreholes and wells can be found in Appendix A. A copy of the soil-boring and well installation permit is provided in Appendix D. The survey reports are provided in Appendix E, and manifests for the transport and disposal of IDW generated at Site 1294 are provided in Appendix F.

2.3 Groundwater Monitoring Well Installation, Development, and Sampling

Between March 31and April 1, 2005, three groundwater monitoring wells were installed at Site 1294. Monitoring wells were installed in soil borings 1294-SB01, 1294-SB02, and 1294-SB03 and labeled 1294-MW02, 1294-MW01, and 1294-MW03, respectively (Figure 6). Each monitoring well was constructed with a 2-inch-inside-diameter schedule 40 polyvinyl chloride (PVC) casing. The screen section in each well was exposed from approximately 2.5 to 7.5 ft bgs. Due to the relatively shallow occurrence of groundwater at this site, construction of groundwater monitoring wells are not consistent with what is described in the *Final Work Plan for Characterization of Underground Storage Tank Sites in Areas 12 and 13 at Marine Corps Base Camp Pendleton* (ERRG and Battelle, 2004). As directed by the San Diego County DEH Monitoring Well Division (Spangenberg, personal communication, 2005), each well was screened from 2.5 to 7.5 ft bgs. The filter pack was installed to 1 inch above the screened interval and an annular seal consisting of 1 inch of bentonite chips was placed on top of the filter pack. The surface completion was constructed of concrete and finished with a 5-foot x 5-foot pad and 12-inch diameter flush mounts. With the exception of the above-mentioned modifications, each monitoring well was installed in accordance with the guidelines presented in the San Diego County *SAM Manual* (DEH, 2004). Monitoring well completion diagrams are provided in Appendix A.

Monitoring wells 1294-MW01, 1294-MW02, and 1294-MW03 were developed on April 22, 2005. The wells at Site 1294 were developed in two steps. First, well screens were surged for approximately 10 minutes. The wells were then purged using a submersible pump. Typically, water quality parameters would be recorded and the well would be purged until the parameters had stabilized. However, all three wells were quickly pumped dry and subsequent recharge was extremely slow. Therefore, no water quality parameters were collected while developing the wells at Site 1294. For a complete description of well development procedures, refer to the *Final Work Plan for Characterization of Underground Storage Tank Sites in Areas 12 and 13 at Marine Corps Base Camp Pendleton* (ERRG and Battelle, 2004). The total volumes of water removed from monitoring wells 1294-MW01, 1294-MW02, and 1294-MW03 during development were 3, 5.5, and 3 gallons, respectively.

On May 6, 2005, monitoring wells 1294-MW01, 1294-MW02, and 1294-MW03 were sampled for TPH-E, VOCs, PCBs, Title 22 Metals and total lead. All groundwater samples were sent to APCL for analysis. Refer to the *Final Work Plan for Characterization of Underground Storage Tank Sites in Areas 12 and 13 at Marine Corps Base Camp Pendleton* (ERRG and Battelle, 2004) for a description of groundwater purging, sampling, and handling procedures.

Prior to sampling, water-level measurements were taken from each well at the site. Next, water from each well was purged using low-flow purging techniques with a bladder pump. Purging was considered complete when water quality parameter stabilization occurred. The following water quality

parameters were measured and recorded: dissolved oxygen (DO), oxidation-reduction potential (ORP), conductivity, pH, temperature, turbidity, and salinity. Approximately 1 liter (L) of groundwater was removed from 1294-MW01 at a flowrate of 0.1 liter per minute (lpm), approximately 0.5 L was removed from 1294-MW02 at a flowrate of 0.03 lpm, and approximately 1L was removed from 1294-MW03 at a flowrate of 0.09 lpm. Groundwater well development and purge logs are provided in Appendix C.

2.4 Sample Analyses

All soil samples collected in the field were sent to a stationary laboratory for TPH-E analyses using EPA Method 8015 Modified. Only one soil sample, 1294-SB01-5, contained measurable TPH-E concentrations. This sample was also analyzed by APCL for VOCs using EPA Method 8260C, PCBs using EPA Method 8082, Title 22 Metals using EPA Method 6010, organic lead using San Diego County DEH method, and SPLP for VOCs, PCBs, and Title 22 Metals using EPA Methods 1312/8260B, 1312/8082, and 1312/6010B, respectively. Only one impacted soil type, a sandy clay fill material, was encountered during assessment activities at this site.

All groundwater samples collected at Site 1294 were analyzed for TPH-E, VOCs, PCBs, and Title 22 Metals. Refer to the *Final Work Plan for Characterization of Underground Storage Tank Sites in Areas 12 and 13 at Marine Corps Base Camp Pendleton* (ERRG and Battelle, 2004) for a description of the analytical procedures used. A discussion of the sample analytical results is presented in Sections 3.2, 3.3, and 3.4. Laboratory analytical reports, chain-of-custody documentation, and laboratory QA/QC data are provided in Appendix B.

QA/QC procedures in the field and the analytical laboratory are outlined in detail in the sampling and analysis plan contained in the *Final Work Plan for Characterization of Underground Storage Tank Sites in Areas 12 and 13 at Marine Corps Base Camp Pendleton* (ERRG and Battelle, 2004). During the field activities, equipment rinsate blanks were collected during the groundwater sampling effort to ensure that sampling equipment was properly decontaminated and that there was no cross-contamination between samples. Equipment rinsates were analyzed for TPH-E. In addition, duplicate groundwater samples were collected from selected monitoring wells for confirmatory analyses in the stationary laboratory. A source blank was collected during groundwater sampling activities, and laboratory-supplied trip blanks were submitted with each cooler containing water samples to be analyzed for VOCs.

The laboratory QA/QC program consisted of laboratory control samples, laboratory duplicates, matrix spike/matrix spike duplicate (MS/MSD), surrogated standards, internal standards, and method blanks. A complete description of the analytical QA/QC program is provided in the *Final Work Plan for Characterization of Underground Storage Tank Sites in Areas 12 and 13 at Marine Corps Base Camp Pendleton* (ERRG and Battelle, 2004).

Section 3.0: RESULTS OF INVESTIGATION

3.1 Summary of Site Geology and Hydrogeology

The near surface geology at Site 1294 consists primarily of a fill layer generally situated between 0-6 ft bgs. The fill material is typically underlain by clayey silt with varying amounts of sand and clay. A sand layer was also observed in several site borings with varying amounts of fines. These lithologies are of the Middle-Eocene Santiago Formation.

Hydrocarbon odors were detected in soil cuttings from the upper 10 feet in boring 1294-SB01 (tank cavity boring) only. No hydrocarbon odors were observed in other boreholes advanced as part of this investigation. Refer to the soil boring logs in Appendix A for a complete description of the lithologies from each soil boring, as well as for detailed information regarding hydrocarbon odors, soil staining, and various other physical characteristics of the soils.

Groundwater measurements taken during installation of the monitoring wells, development of the monitoring wells, and groundwater sampling indicate that the water levels at Site 1294 equilibrate to depths ranging from approximately 3 to 5 ft bgs depending on the surface elevation of the boring. Groundwater was encountered in all soil borings drilled at the site. Groundwater monitoring wells 1294-MW01, 1294-MW02, and 1294-MW03, were installed in soil borings 1294-SB02, 1294-SB01, and 1294-SB03, respectively.

Water-level data collected from the monitoring wells at Site 1294 during the May 6, 2005 groundwater sampling were used to determine groundwater flow directions and hydraulic gradients. The data from wells 1294-MW01, 1294-MW02, and 1294-MW03, indicated water levels of 3.92, 3.24, and 5.30 ft below top of casing (btoc), respectively, and are provided in Table 1. These measurements correspond to water-table elevations of 285.55, 286.14 and 284.44 ft amsl, respectively. These data were used in three-point calculations which indicated a groundwater flow direction of approximately N26°E, with an average hydraulic gradient of 0.047.

No free product was observed at Site 1294 during the May 6, 2005 groundwater sampling event.

3.2 Soil Sample Results and Interpretation

Soil samples were collected from five soil borings at Site 1294: 1294-SB01, 1294-SB02, 1294-SB03, 1294-SB04, and 1294-SB05. All of the soil borings were advanced to approximately 30 ft bgs. Soil boring locations at Site 1294 are shown on Figure 6.

All soil samples collected from Site 1294 were sent to a stationary analytical laboratory for TPH-E analyses. Based on visual inspection of the soil cuttings and sample headspace analyses, only one sample was determined to contain measurable hydrocarbons. This sample, 1294-SB01-5, was selected to be analyzed by the stationary laboratory for more extensive analysis including VOCs, PCBs, Title 22 Metals, and organic lead. Results of the extended analysis are presented on Table 2. Refer to the *Final Work Plan for Characterization of Underground Storage Tank Sites in Areas 12 and 13 at Marine Corps Base Camp Pendleton* (ERRG and Battelle, 2004) for a complete listing of all analytes and detection limits. Figure 7 is a contaminant distribution map for soils which illustrates the soil analysis sample results in relation to the sampling locations at Site 1294.

According to the analytical results, the soil contamination at Site 1294 appears to be located in the shallow subsurface surrounding soil boring 1294-SB01, primarily within the former UST 1294 tank cavity backfill. In this region, concentrations of TPH-D and TPH-E quantified as motor oil (TPH-MO) were detected in the 5-foot interval at concentrations of 2,350 and 3,300 mg/kg, respectively. Several metals were detected in the 5-foot interval of 1294-SB01 including aluminum (5,850 mg/kg), arsenic (1.3 mg/kg), barium (24.6 mg/kg), chromium (7.1 mg/kg), lead (7.4 mg/kg), and nickel (4.2 mg/kg). Several TPH constituents, VOCs, Title 22 Metals, and PCBs were detected in soil samples between the laboratory method detected limit (MDL) and the practical quantitation limit (PQL). These estimated results are not discussed in this text; however, these data are included on their respective tables. Table 2 provides a complete list of analytical results for soil samples collected at Site 1294. No other VOC, PCB, organic lead, or Title 22 Metals detections were observed at the site. Based on the analytical data collected at Site 1294, the extent of the soil contaminant plume at concentrations greater than 100 mg/kg TPH-D/MO has been clearly defined and is limited in extent to a small area within and surrounding the former UST tank cavity. Figures 8 and 9 are cross sections through Site 1294 that show lithologic information, analytical results, and approximate extent of hydrocarbons remaining in the soil at the site.

Using the analytical data collected during this site investigation, it is estimated that the volume of contaminated soil resides within and immediately surrounding the former UST cavity. A conservatively estimated volume of contaminated soil of 245 cubic feet (9 cubic yards) was determined. This estimate was based on assumptions that contamination greater than 100 mg/kg TPH-D/MO extends radially an average of 5 ft from 1294-SB01. Based on the analytical results obtained from site investigation activities conducted by Battelle, the maximum TPH-D and TPH-MO concentrations detected in the soil at Site 1294 are 2,350 and 3,300 mg/kg, respectively. These were the only quantifiable TPH-D and TPH-MO concentrations detected in the soil at Site 1294. Other hydrocarbon detections at this site were reported between the PQL and MDL and are estimated ("J") values.

3.3 Synthetic Precipitation Leaching Procedure Analytical Results

SPLP tests were performed at Site 1294 to evaluate the potential for contaminants to leach from the soil and subsequently migrate in the subsurface. SPLP tests were performed on the only soil sample with measurable concentrations of TPH-E, 1294-SB01-5.

SPLP test results from soil sample 1294-SB01-5 indicate that no quantifiable concentrations of VOCs or PCBs were present in the leachate generated from the soil sample. Title 22 metals present in the leachate generated from soil sample 1294-SB01-5 included aluminum, barium, and nickel at concentrations of 2,310, 11.0, and 7.3 µg/L, respectively. No other quantifiable concentrations of Title 22 metals were detected in the leachate. Other metals detections at this site were reported between the PQL and MDL and are estimated ("J") values. The detection of the metals in the leachate generated from the soil sample indicates there is potential for some contaminant mobility in the vadose zone. However, due to the relatively low transmissivity and hydraulic conductivity of the site lithologies (i.e., 10^{-2} to 10^{-7} cm/s) and the fact that the TPH groundwater plume is very limited in extent, there is a low possibility that site-related chemicals (i.e., TPH, VOCs, metals, and PCBs) will ever reach a groundwater production well capture zone or surface water body (e.g., Lake O'Neill). Additionally, with the exception of aluminum, the VOCs, PCBs, and metals detected in the soil leachate from Site 1294 are all below their respective regulatory screening levels or no screening level exists. Analytical results for detected compounds in the SPLP leachate are presented in Table 3.

3.4 Groundwater Sample Results and Interpretation

Groundwater monitoring wells 1294-MW01, 1294-MW02, and 1294-MW03 were installed in soil borings 1294-SB02, 1294-SB01, and 1294-SB03, respectively. Figure 6 illustrates the location of

each groundwater monitoring well in relation to the former UST 1294 location and soil borings advanced as part of the site assessment. Groundwater monitoring wells were developed and sampled as described in Section 2.3. Water quality parameters (DO, ORP, conductivity, pH, temperature, turbidity, and salinity) collected during groundwater development and pre-sampling purging activities, as well as water-level measurements collected from each groundwater monitoring well prior to purging, are provided in groundwater well development and sampling purge logs located in Appendix C.

Groundwater samples collected at Site 1294 from 1294-MW01, 1294-MW02, and 1294-MW03 were obtained on May 6, 2005 and sent to APCL, a stationary analytical laboratory, for TPH-E, VOC, PCBs, and Title 22 metals analyses. Table 4 presents the results of these sample analyses. Based on the analytical results, TPH-D was detected in groundwater samples 1294-MW01, 1294-MW02, and 1294-MW03 at concentrations of 0.23, 0.37, and 0.80 µg/L, respectively. TPH-MO was not detected in any of the groundwater samples above the laboratory PQL. The following metals were detected in groundwater sample 1294-MW01, 1294-MW02, and 1294-MW03: aluminum, arsenic, barium, chromium, lead, and nickel. No other quantifiable concentrations of Title 22 metals were detected and no PCB or VOC constituents were detected in 1294-MW01, 1294-MW02, or 1294-MW03. With the exception of the aluminum concentration detected in all Site 1294 wells and the lead concentration detected in the tank cavity well (1294-MW02), no metals concentrations were detected in the downgradient and cross-gradient wells above their respective regulatory screening levels or no screening level is currently available. Groundwater sample results are presented in Table 4 and maximum detected chemical concentrations in groundwater are presented in Table 6.

3.5 Field Quality Assurance/Quality Control

QA/QC measures were taken in the field to ensure that meaningful and representative data sets were generated at Site 1294. The following subsections describe the QA/QC results from this task.

3.5.1 Field Duplicate Samples. Field duplicates were collected to test the representativeness of the groundwater sample collection procedures, as well as to evaluate the precision of the stationary laboratory analytical results. Groundwater sampling at 1294 was conducted as part of a larger sampling event that included Site 1313. In all, three groundwater samples were collected from Site 1294 and three groundwater samples were collected from Site 1313. Therefore, one duplicate groundwater sample was collected during this sampling event (1313-MW02DUP). The analytical results from the original and duplicate sample collected from 1313-MW02 were in agreement, and confirmed the presence of TPH-E and absence of VOCs and polynuclear aromatic hydrocarbons (PAHs) in this well (Battelle, 2005). Results of the field duplicate analyses are presented on Table 4.

3.5.2 Equipment Rinsate Blanks. One equipment rinsate sample was collected at Site 1294 during the groundwater sampling event and analyzed for VOCs. No VOCs were measured in the equipment rinsate water from the sample collected, indicating that proper decontamination of sampling equipment occurred and sample analytical results are representative of actual aquifer conditions. Results of the equipment rinsate blank analyses are presented in Table 5.

3.5.3 Trip Blanks. A laboratory-provided trip blank accompanied the sample cooler shipped to the stationary analytical laboratory that contained groundwater samples collected at Site 1294. The trip blank helps to provide evidence that contaminants detected in environmental samples are not exposed to contamination during sample transport. The trip blank that accompanied groundwater samples collected from Site 1294 was designated to be analyzed for VOCs. No VOCs were measured in the trip blanks accompanying the groundwater samples collected from Site 1294. Results of the trip blank analyses are presented on Table 5.

3.5.4 Source Blanks. A source blank was collected to ensure that source water used during decontamination was not a source of contamination. Because one water source was used for equipment decontamination during the groundwater sampling event, one source blank sample was collected (SB-5-6-2005). To prepare the source blank, the volatile organic analysis (VOA) vials were filled with the source water at the same time that it was used for decontamination. No VOCs were detected in the source blank associated with the May 6, 2005 groundwater sampling event. Results of the source blank analyses are presented on Table 5.

3.6 Laboratory Quality Assurance/Quality Control

Analyses of soil and groundwater samples were performed by APCL, a California-certified laboratory, according to the *Quality Assurance Program Plan for Environmental Analysis* (APCL, 2005). Laboratory quality control (QC) was performed as described in the Section 10, *Quality Control Checks,* (APCL, 2005). QC charts were used to verify method precision and accuracy. Tabulated QC data were reviewed by the QC Officer and analysts. In addition, the QC procedures used during gas chromatography (GC) and gas chromatography/mass spectrometry (GC/MS) analyses were based primarily on those specified in U.S. EPA 8000 (Resource Conservation and Recovery Act) and the California Leaking Underground Fuel Tank (LUFT) Field Manual methods of analysis.

Data were reviewed for conformance to generally accepted standards for data quality. The QC checks in the laboratory protocol are specific to the analytical method of interest and include laboratory control samples (LCS), MS/MSD, surrogate spikes (if applicable), and method blanks. In general, all laboratory QC criteria were met; any discrepancies discovered during the review process were evaluated in relation to their associated environmental and field QC sample results. Holding times were met for all sample analyses, and all data released by APCL have met the internal laboratory technical data evaluation and review requirements in support of the U.S. Department of Defense Installation Restoration Program.

The analytical data, along with the associated laboratory QC information, was forwarded to an independent data validation service for data validation. A Navy Level III data validation was performed on 80% of the groundwater samples. The remaining 20% of the samples underwent a Level IV data validation. The results of the validation indicated that the data meet all analytical criteria, and these results are provided in Appendix B. The individual laboratory data sheets and the complete laboratory QA/QC documentation for the samples are included in Appendix B.

Section 4.0: EXPOSURE CONCERNS

Based on the results of the previous investigations at this site and the results of the most recent site assessment activities, there is minimal risk of exposure to contaminated soil and groundwater at Site 1294. Soil samples taken from the excavation following the tank removal, as well as from the site assessment conducted by Battelle, indicate that the soil beneath former UST 1294 contains a limited amount of hydrocarbon constituents residing within and immediately surrounding the former UST cavity. Groundwater samples collected by Battelle also indicate that groundwater within and surrounding the former UST 1294 cavity contains minor amounts of hydrocarbon constituents and various metals.

Groundwater results were compared to regulatory screening levels. Table 6 presents a listing for comparison of maximum concentrations of TPH-E, VOCs, PCBs, and Title 22 metals in groundwater samples, as well as associated regulatory screening levels for these compounds. The screening levels provided in Table 6 include primary maximum contaminant levels (MCLs) and other regulatory screening levels including taste and odor thresholds (TOTs) for TPH.

TPH-E detections at low levels (ranging from 0.23 to 0.80 mg/L) in 1294-MW01, 1294-MW02, and 1294-MW03 exceeded their TOT values (0.1 µg/L) for TPH-D, as defined in the Basin Plan (RWQCB, 1998). The total lead concentration (19.4 µg/L) in 1294-MW02 (tank cavity well) exceeded its MCL (15 µg/L). Aluminum concentrations in all three Site 1294 wells exceeded the MCL of 1,000 µg/L. All other compounds were below their corresponding regulatory criteria.

Data provided by the previous investigations and the results of this site assessment indicate that there is minimal potential for contaminant exposure to human or biological receptors at Site 1294. The contamination identified in the soil is between 5 and 10 ft below ground surface, no potable supply wells or surface water body (e.g., Lake O'Neill) are located within 1,000 ft of the site, and the site is primarily covered with asphalt. Additionally, due to the relatively low transmissivity and hydraulic conductivity of the site lithologies (i.e., 10^{-2} to 10^{-10} cm/s) and the fact that the TPH groundwater plume appears to be very limited in extent, there is a very low likelihood that site-related chemicals (i.e., TPH, VOCs, PCBs, and metals) will ever reach a groundwater production well capture zone or Lake O'Neill. Therefore, no direct exposure pathways exist at Site 1294.

Site 1294 poses no threat to protected or endangered species. No sensitive habitats are located at or within close proximity to the site and the nearest groundwater production well is located approximately 6 miles south of the site.

Section 5.0: SUMMARY AND CONCLUSIONS

Five boreholes were advanced at Site 1294 to a depth of approximately 30 ft bgs. The near surface geology at Site 1294 consists primarily of a fill layer generally situated between 0 and 6 ft bgs. The fill material is typically underlain by clayey silt with varying amounts of sand and clay. A sand layer was also observed in several site borings with varying amounts of fines. These lithologies are of the Middle-Eocene Santiago Formation. Groundwater was first observed between approximately 2 and 3 ft bgs, depending on the surface elevation of the borehole. During the advancement of each soil boring, soil samples generally were obtained at 5-foot intervals and analyzed using standard laboratory techniques. Elevated TPH-E constituents were detected in one soil sample (1294-SB01-5') which was advanced through the former tank cavity. In this soil boring, TPH-D and TPH-MO concentrations were 2,350 and 3,300 mg/kg, respectively. Title 22 metals detected in the tank cavity sample which contained the highest level of TPH detected at the site included aluminum (5,850 mg/kg), arsenic (1.3 mg/kg), barium (24.6 mg/kg), chromium (7.1 mg/kg), lead (7.4 mg/kg), and nickel (4.2 mg/kg). No other metals, VOCs, or PCBs were detected above their respective laboratory PQL. The soil sample data collected at Site 1294, during recent and historical soil sampling efforts at the site, indicate that the soil plume containing TPH-D/MO concentrations greater than 100 mg/kg has been completely defined and is limited to the area within and immediately surrounding the former UST cavity.

Groundwater monitoring wells were installed in three of the soil borings advanced as part of the site assessment conducted by Battelle during March and April 2005. Following development of the monitoring wells, the wells were purged using low-flow purging techniques and sampled for TPH-E, VOCs, PCBs and Title 22 Metals. Groundwater analytical results indicated that TPH-E constituents above the TOT of 0.10 mg/L were present in all of the groundwater monitoring wells. However, because this water is not likely to ever reach a drinking water production well, this water quality standard may not be applicable at Site 1294. TPH-MO was not detected in any of the groundwater samples above the laboratory PQL. Metals concentrations were detected in all wells at Site 1294. With the exception of aluminum and total lead, all other metals detections were below their respective regulatory criteria. Aluminum was detected in all site wells above its MCL of 1,000 µg/L, with the highest detection (3,920 µg/L) found in downgradient well 1294-MW03. Lead was also detected in all site wells; however, only well 1294-MW02 (source area well) contained lead (19 µg/L) at a concentration greater than the MCL of 15 µg/L. Lead concentrations reported in wells 1294-MW01 (cross gradient) and 1294-MW03 (downgradient) were detected at estimated values between the laboratory MDL and PQL. Aluminum and lead were also detected in the leachate from soil sample 1294-SB01-5 (i.e., the tank cavity sample that contained the highest TPH detection). Additionally, aluminum and lead, as well as various other metals, have been identified at background concentrations in surface soils located in the San Luis Rey basin which includes Site 1294 (Southwest Division Naval Facilities Engineering Command [SWDIV], 1996). A comparison of background metals concentrations and soil sample results is provided on Table 7.

Based on the background concentrations of aluminum and lead in soils, these constituents could potentially leach to groundwater and result in concentrations similar to those detected at Site 1294 (aluminum and lead were detected in the soil leachate sample at concentrations of 2,310 and 3.9 µg/L, respectively). However, a more detailed background analysis in conjunction with additional groundwater monitoring may be required if the detection of these constituents becomes an issue of regulatory concern.

No VOCs were measured in any of the Site 1294 wells and no PCBs were measured in 1294-MW02 (i.e., tank cavity well) during the May 6, 2005 sampling event. Furthermore, no free product was detected at Site 1294.

Maximum detected contaminant concentrations reported from the analysis of groundwater samples were compared to regulatory screening levels to evaluate potential exposure concerns. All contaminant concentrations measured in groundwater (TPH-E and Title 22 metals) were below their respective Water Quality Criteria for Inland Surface Waters and Ground Waters (RWQCB, 1998), with the exception of TPH-D (maximum concentration of 0.80 mg/L) exceeding its TOT value of 0.10 mg/L, aluminum (maximum concentration of 3,920 µg/L) exceeding its MCL of 1,000 µg/L, and total lead (maximum concentration 19.4 µg/L) exceeding its MCL 15 µg/L.

Section 6.0: RECOMMENDATIONS

Based on the available soil and groundwater analytical data collected during the site assessment conducted during March through April 2005, no further action and site closure is recommended for Site 1294. With the exception of TPH and aluminum concentrations dissolved in groundwater, the soil and groundwater plumes have been completely defined and are limited to the region directly surrounding the former UST 1294 tank cavity. TPH-E and aluminum concentrations exceeded their respective regulatory criteria in all Site 1294 groundwater wells; however, because Site 1294 is located approximately 6 miles from the nearest drinking water production well, the nearest surface water body (Lake O'Neill) is greater that 1,000 feet away from the site, and the groundwater is present in relatively low permeability soils, it is highly unlikely that these constituents would impact a production well or a nearby surface water body. Additionally, the metals concentrations detected in excess of their respective regulatory criteria (i.e., aluminum and total lead) may be associated with background metals within the soil and groundwater at Camp Pendleton (SWDIV, 1996). The elevated lead concentration is limited to the area within and immediately surrounding the former tank cavity. All other contaminant concentrations in the soil and groundwater at Site 1294 are below their respective regulatory criteria. The site is covered by asphalt pavement and the majority of soil contaminants are limited to a small area within and surrounding the former UST cavity between 5-10 ft bgs and no direct exposure pathways exist for contaminants that remain in place. Additionally, due to the relatively low transmissivity and hydraulic conductivity of the site lithologies (i.e., 10^{-2} to 10^{-7} cm/s), there is a very low likelihood that site-related chemicals (i.e., TPH and metals) will ever reach a sensitive receptor. Therefore, considering "all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible," additional corrective action would not be "consistent with the maximum benefit to the people of the state" (California State Water Resources Control Board [CSWRCB] Resolution 92-49).

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FIGURES

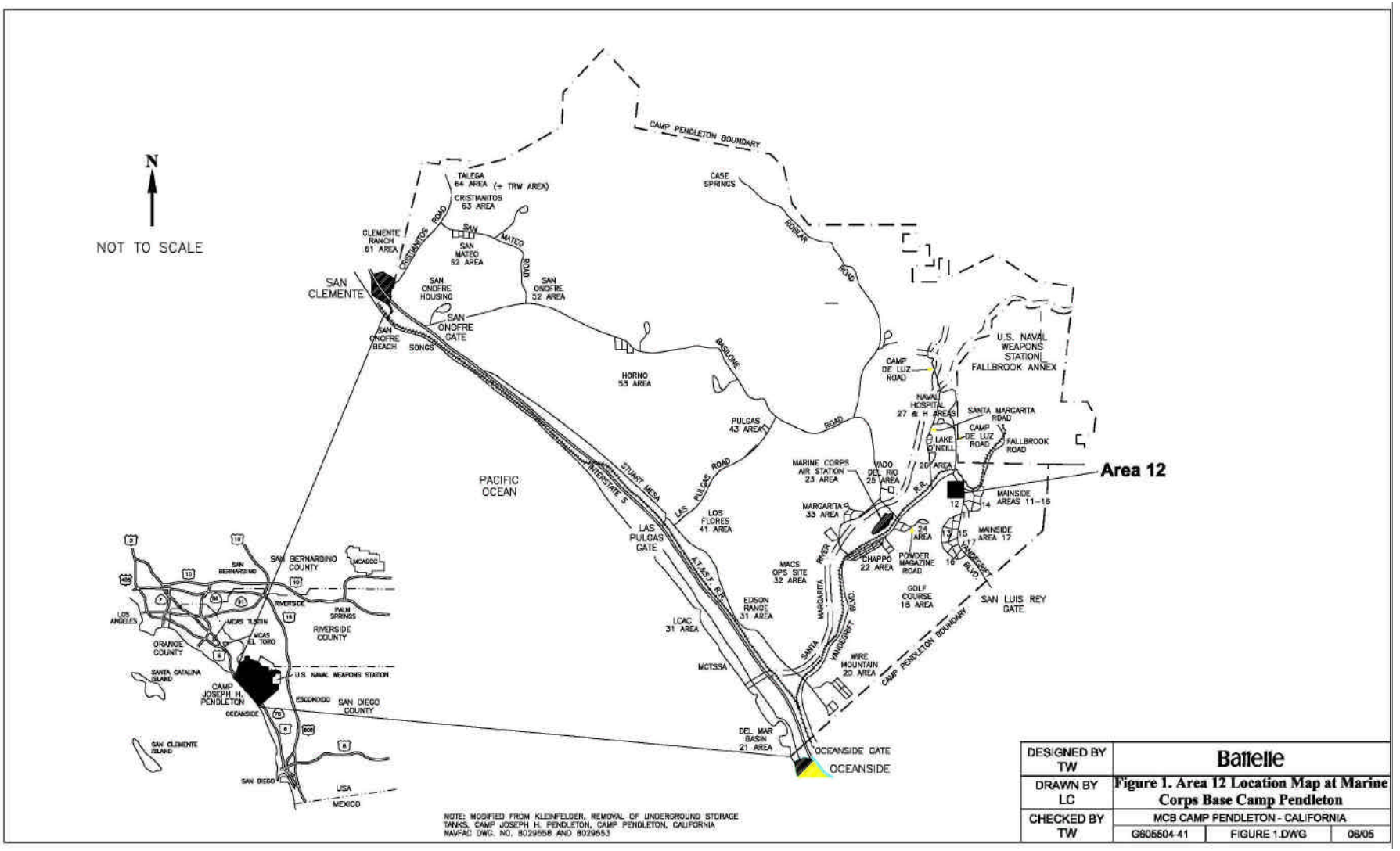

Figure 1. Area 12 Location Map at Marine Corps Base Camp Pendleton

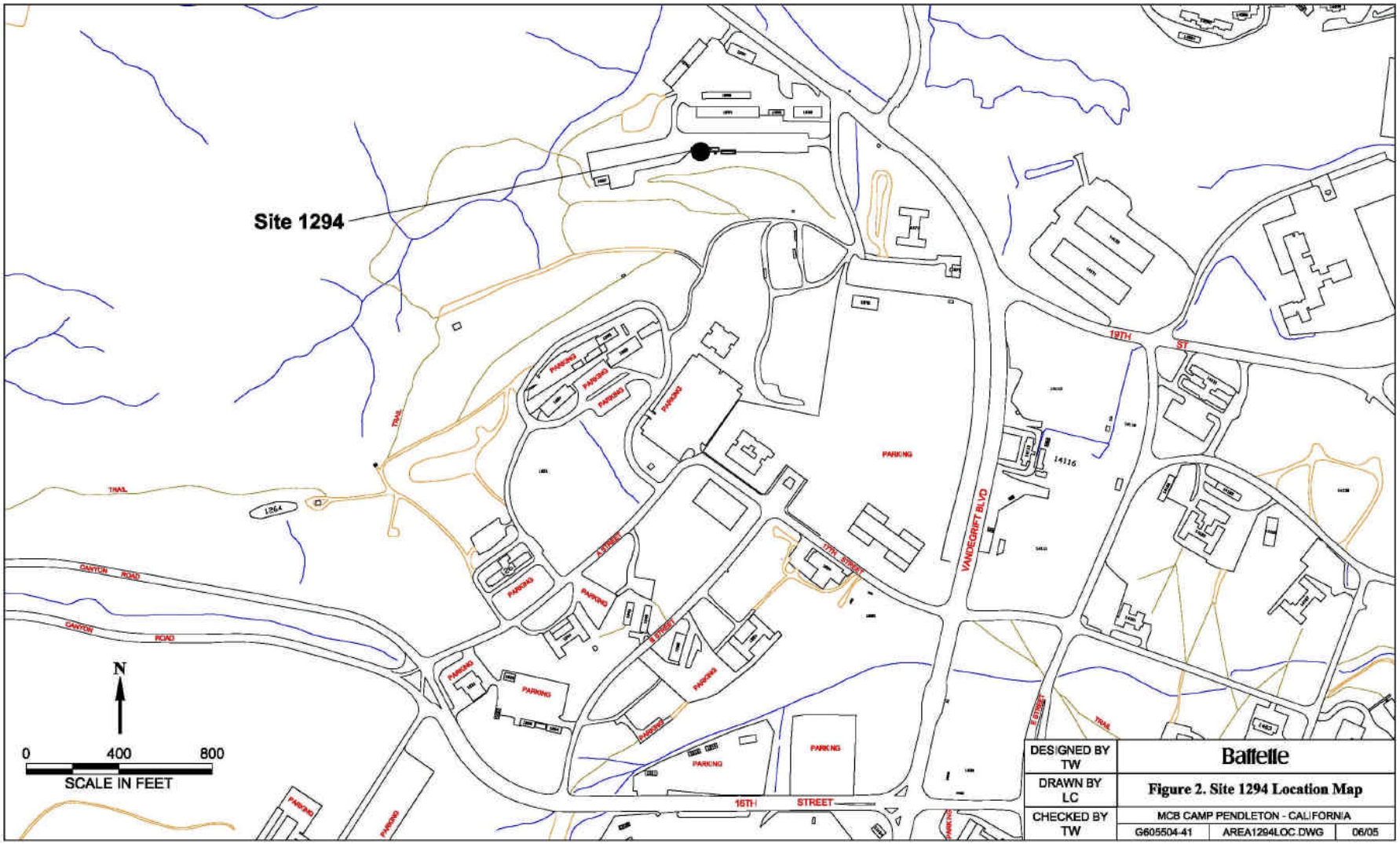

Figure 2. Site 1294 Location Map

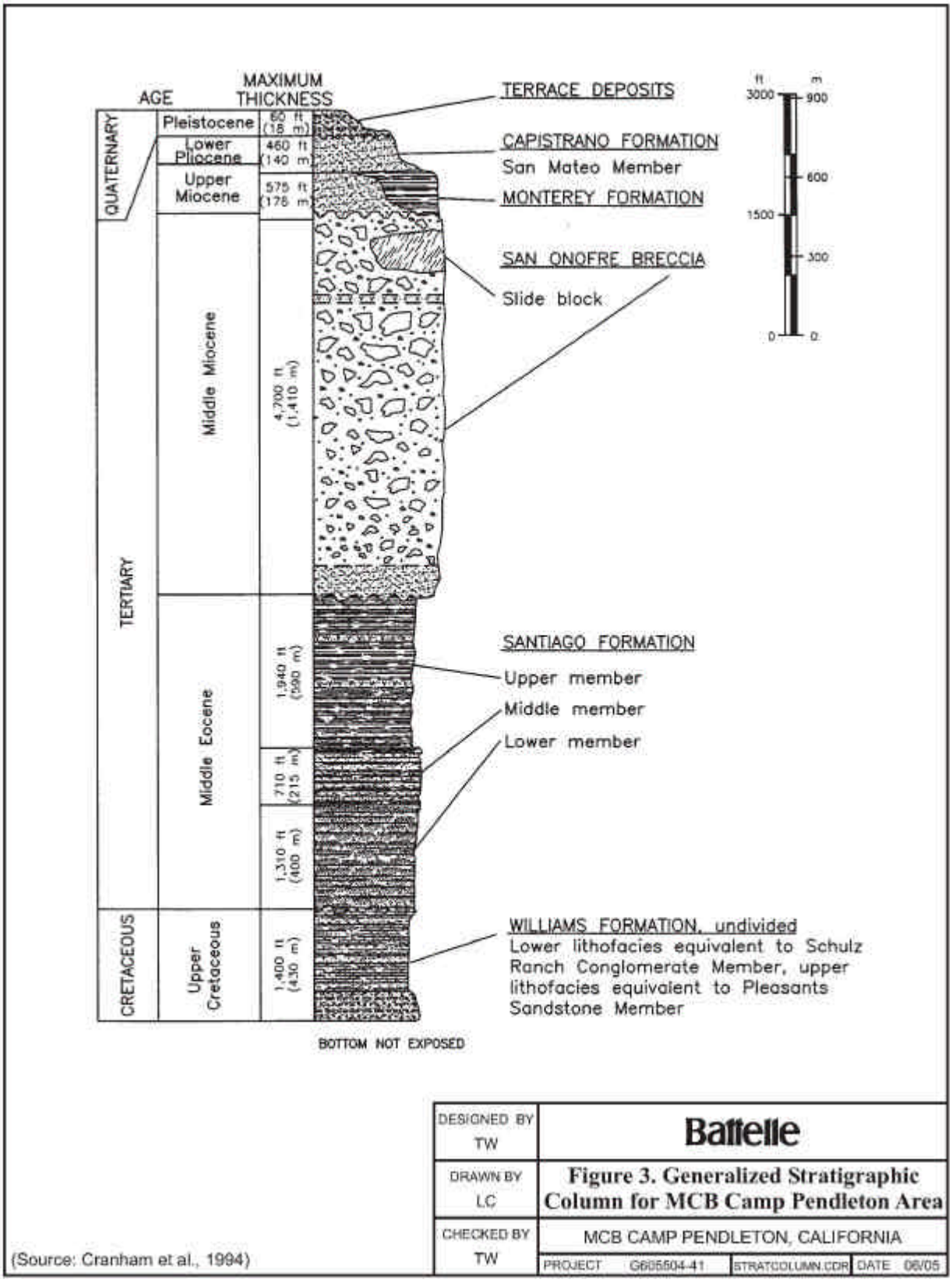

Figure 3. Generalized Stratigraphic Column for MCB Camp Pendleton Area

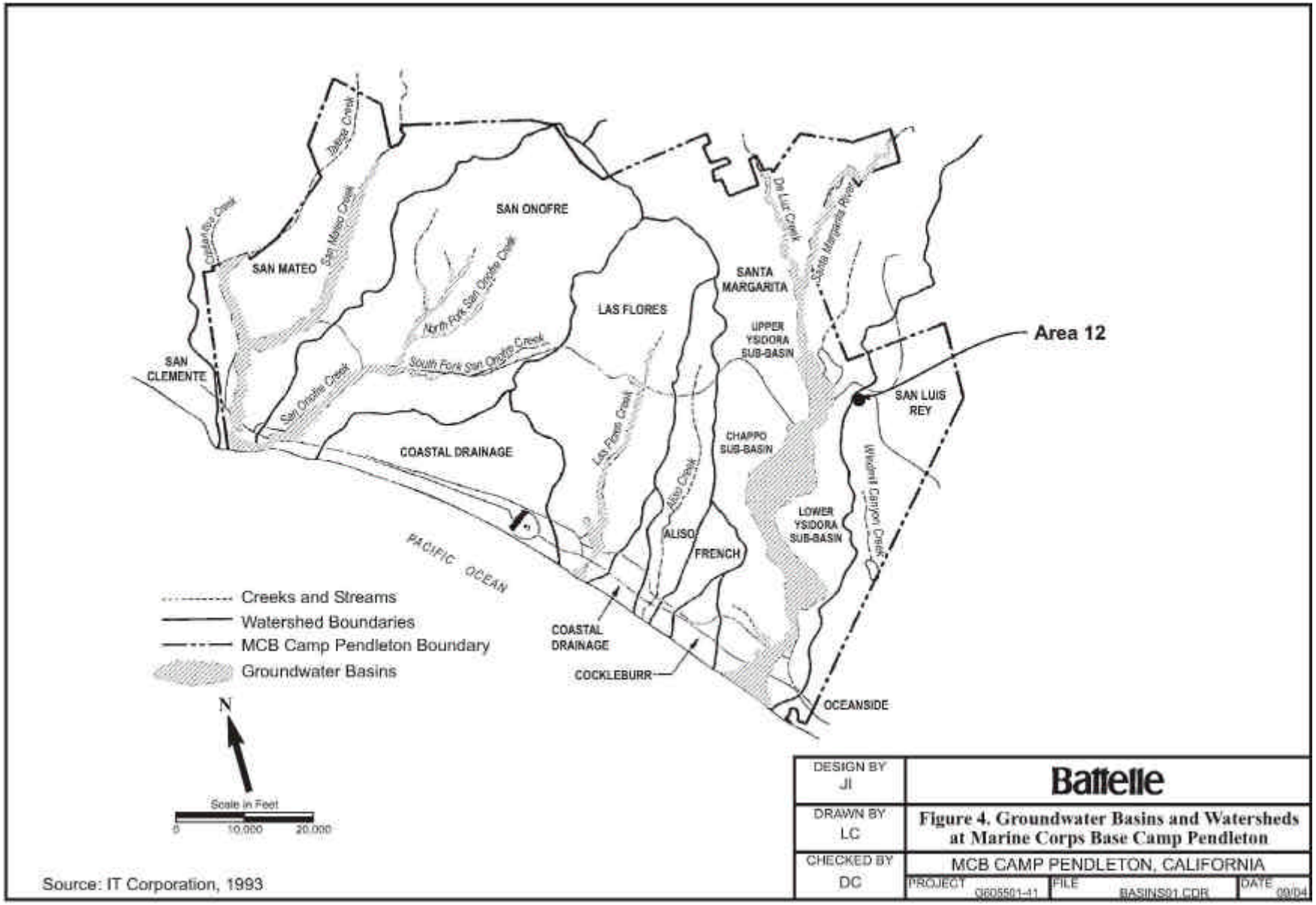

Figure 4. Groundwater Basins and Watersheds at Marine Corps Base Camp Pendleton

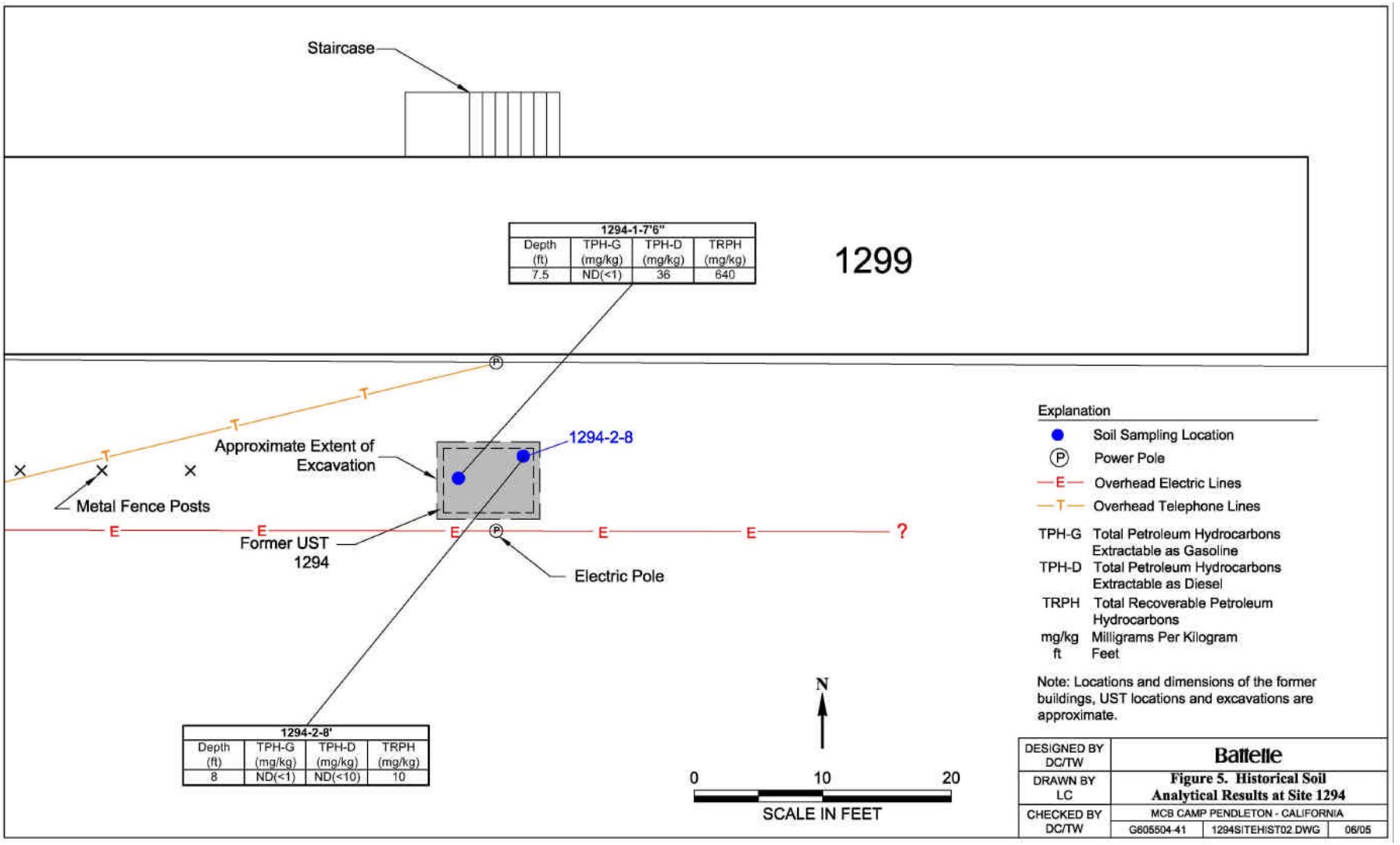

Figure 5. Historical Soil Analytical Results at Site 1294

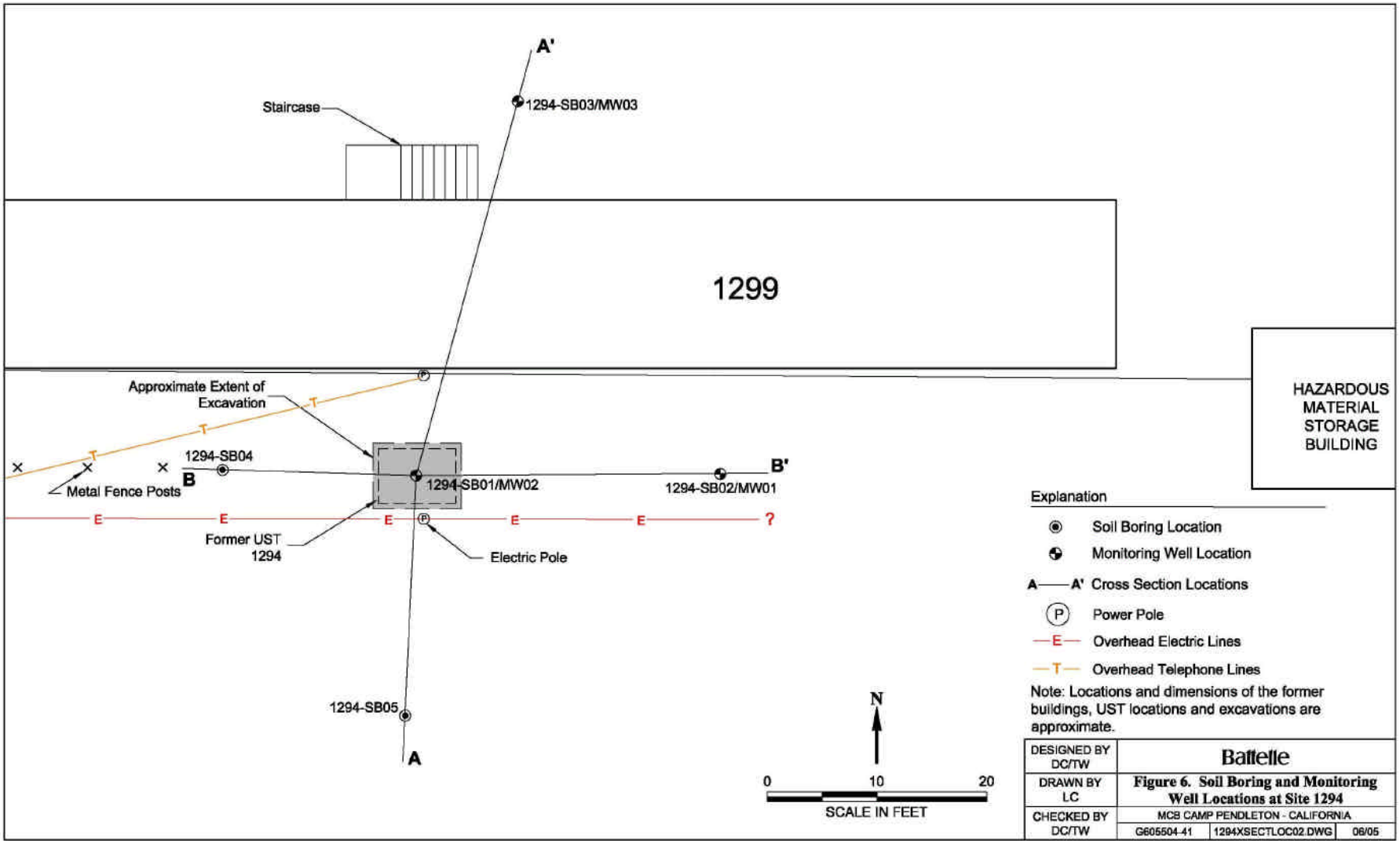

Figure 6. Soil Boring and Monitoring Well Locations at Site 1294

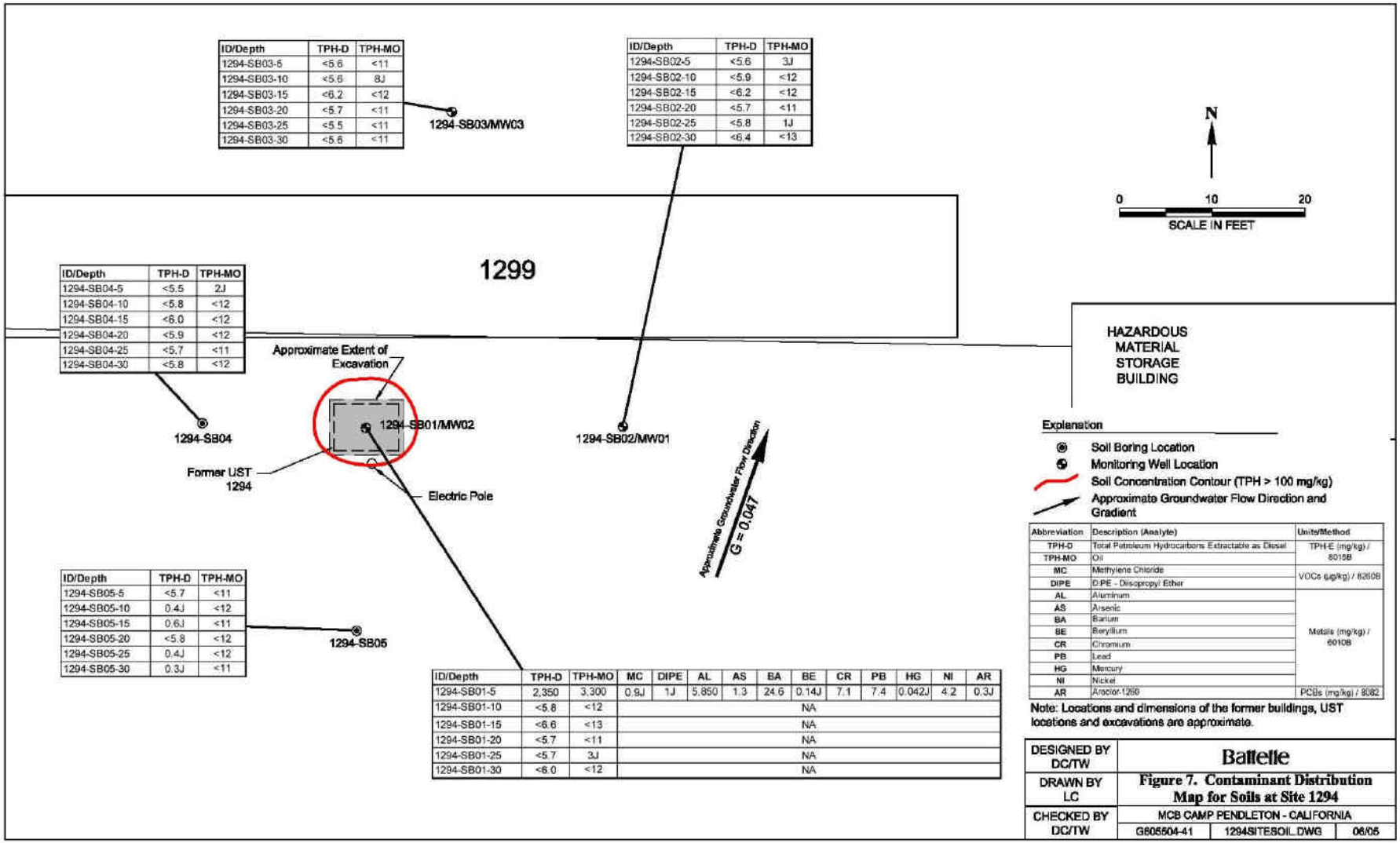

Figure 7. Contaminant Distribution Map for Soils at Site 1294

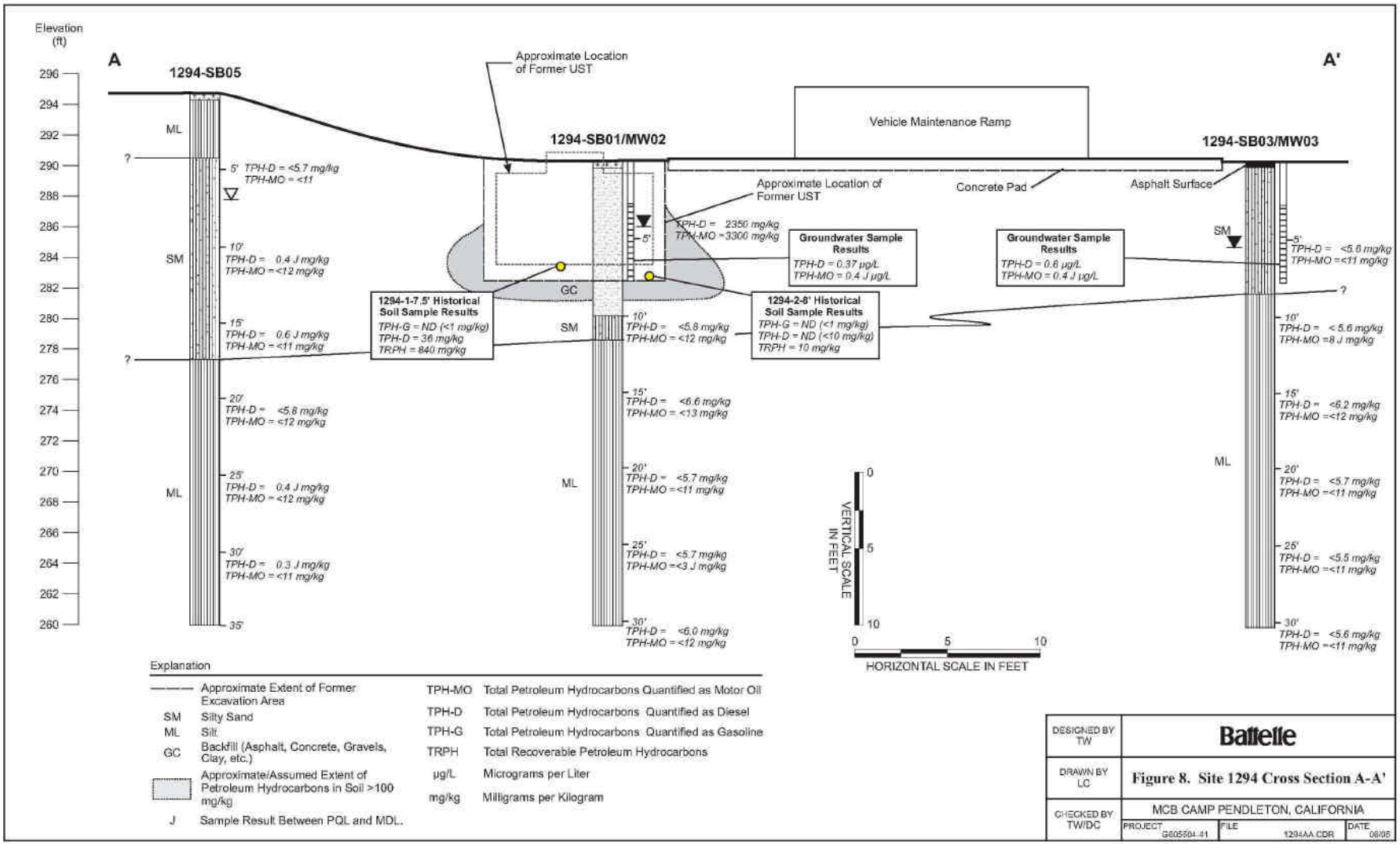

Figure 8. Site 1294 Cross Section A-A´

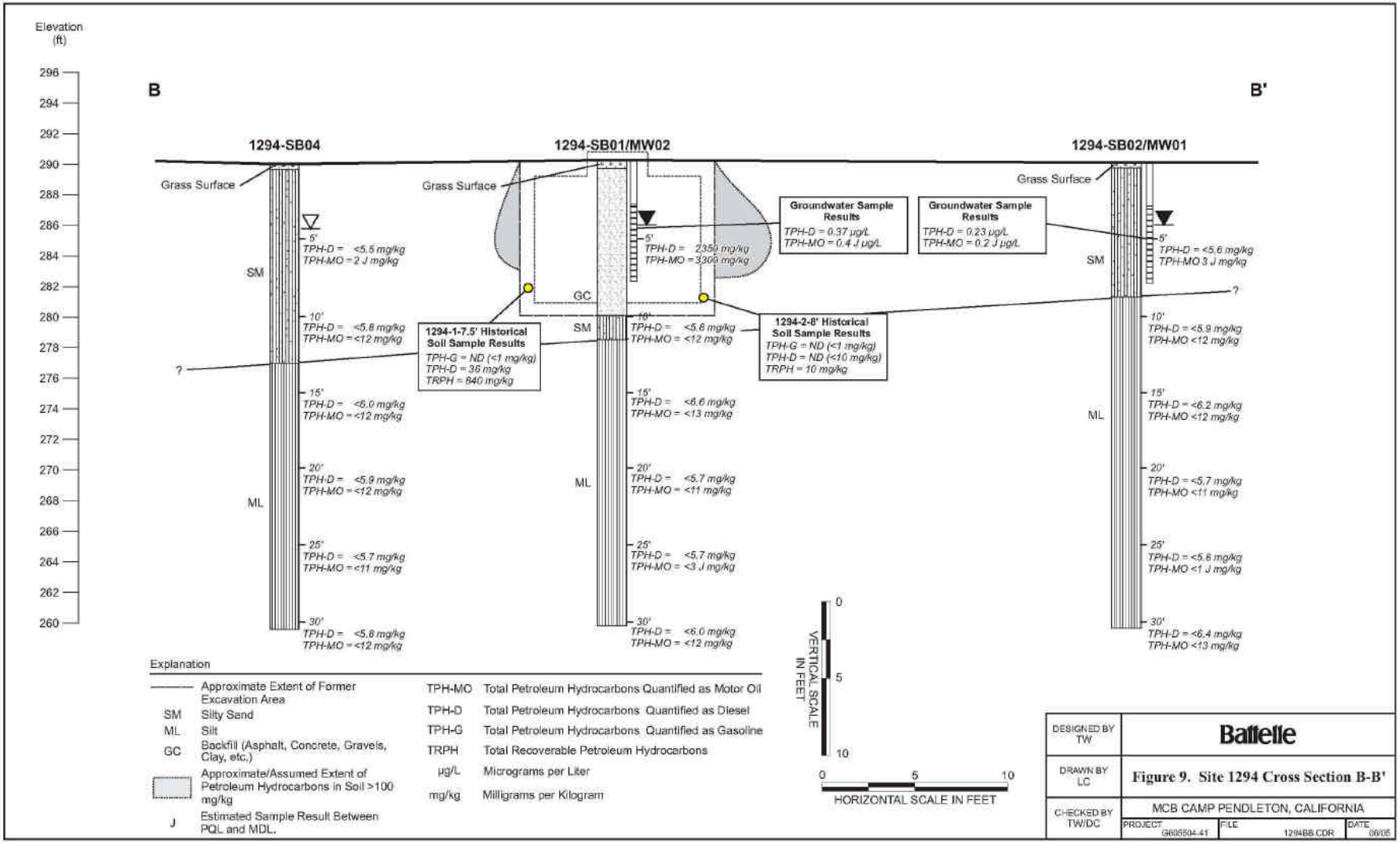

Figure 9. Site 1294 Cross Section B-B´

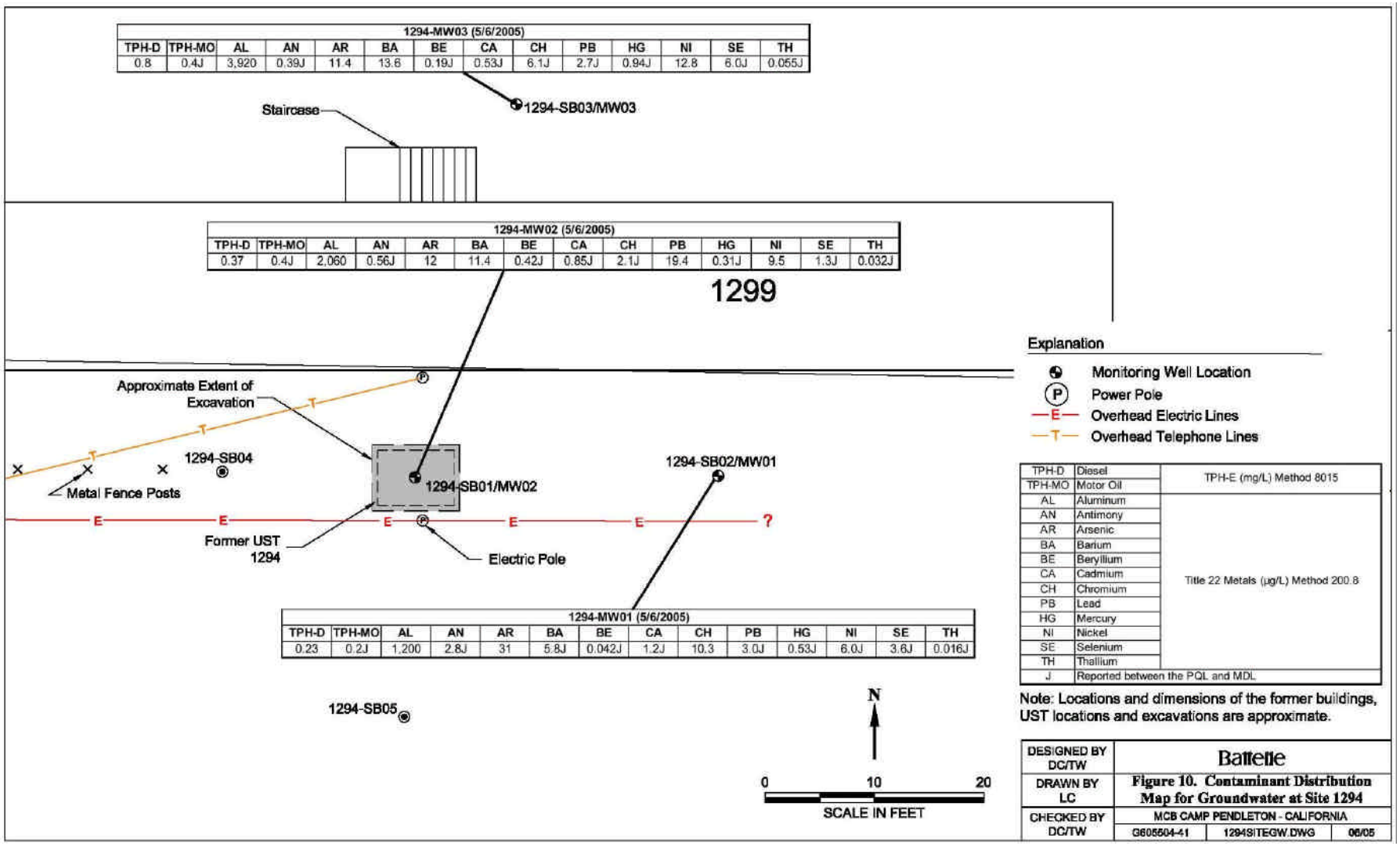

Figure 10. Contaminant Distribution Map for Groundwater at Site 1294

TABLES

Table 1. Groundwater- and Product-Level Measurements at Site 1294

Well ID	Date Measured	Top of Casing Elevation (ft amsl)	Total Depth (ft btoc)	Water Level (ft btoc)	Water Elevation (ft amsl)	Product Level (ft btoc)	Product Elevation (ft amsl)
1294-MW01	05/06/2005	289.47	30.00	3.92	285.55	-	-
1294-MW02	05/06/2005	289.38	30.00	3.24	286.14	-	-
1294-MW03	05/06/2005	289.74	30.00	5.30	284.44	-	-

amsl = above mean sea level.
btoc = below top of casing.
ft = feet
ID = identification.

Table 2. Analytical Results for Detected Compounds in Soil Samples Collected at Site 1294

Sample ID/Depth	Date Sampled	TPH-E (mg/kg) Method 8015B		VOCs (µg/kg) Method 8260B		Metals (mg/kg) Method 6010B								PCBs (mg/kg) Method 8082
		Diesel	Motor Oil	Methylene Chloride	DIPE	Aluminum	Arsenic	Barium	Beryllium	Chromium	Lead	Mercury	Nickel	Aroclor-1260
1294-SB01-5	03/18/05	2,350	3,300	0.9J	1J	5,850	1.3	24.6	0.14J	7.1	7.4	0.042J	4.2	8J
1294-SB01-10	03/18/05	<5.8	<12	NA		NA								NA
1294-SB01-15	03/18/05	<6.6	<13	NA		NA								NA
1294-SB01-20	03/18/05	<5.7	<11	NA		NA								NA
1294-SB01-25	03/18/05	<5.7	3J	NA		NA								NA
1294-SB01-30	03/18/05	<6.0	<12	NA		NA								NA
1294-SB02-5	03/18/05	<5.6	3J	NA		NA								NA
1294-SB02-10	03/18/05	<5.9	<12	NA		NA								NA
1294-SB02-15	03/18/05	<6.2	<12	NA		NA								NA
1294-SB02-20	03/18/05	<5.7	<11	NA		NA								NA
1294-SB02-25	03/18/05	<5.8	1J	NA		NA								NA
1294-SB02-30	03/18/05	<6.4	<13	NA		NA								NA
1294-SB03-5	03/22/05	<5.6	<11	NA		NA								NA
1294-SB03-10	03/22/05	<5.6	8J	NA		NA								NA
1294-SB03-15	03/22/05	<6.2	<12	NA		NA								NA
1294-SB03-20	03/22/05	<5.7	<11	NA		NA								NA
1294-SB03-25	03/22/05	<5.5	<11	NA		NA								NA
1294-SB03-30	03/22/05	<5.6	<11	NA		NA								NA
1294-SB04-5	03/22/05	<5.5	2J	NA		NA								NA
1294-SB04-10	03/22/05	<5.8	<12	NA		NA								NA
1294-SB04-15	03/22/05	<6.0	<12	NA		NA								NA
1294-SB04-20	03/22/05	<5.9	<12	NA		NA								NA

Table 2. Analytical Results for Detected Compounds in Soil Samples Collected at Site 1294 (continued)

Sample ID/Depth	Date Sampled	TPH-E (mg/kg) Method 8015B		VOCs (µg/kg) Method 8260B		Metals (mg/kg) Method 6010B								PCBs (mg/kg) Method 8082
		Diesel	Motor Oil	Methylene Chloride	DIPE	Aluminum	Arsenic	Barium	Beryllium	Chromium	Lead	Mercury	Nickel	Aroclor-1260
1294-SB04-25	03/22/05	<5.7	<11	NA		NA								NA
1294-SB04-30	03/22/05	<5.8	<12	NA		NA								NA
1294-SB05-5	03/31/05	<5.7	<11	NA		NA								NA
1294-SB05-10	03/31/05	0.4J	<12	NA		NA								NA
1294-SB05-15	03/31/05	0.6J	<11	NA		NA								NA
1294-SB05-20	03/31/05	<5.8	<12	NA		NA								NA
1294-SB05-25	03/31/05	0.4J	<12	NA		NA								NA
1294-SB05-30	03/31/05	0.3J	<11	NA		NA								NA
1294-SB06-35	03/31/05	0.4J	<11	NA		NA								NA

mg/kg = milligram per kilogram
NA = not analyzed.
ND = not detected.
PCB = polychlorinated biphenyl.
µg/kg = microgram per kilogram
VOC = volatile organic compound.

Table 3. Analytical Results for SPLP Leachate Samples Obtained from Soil Samples Collected at Site 1294

Sample ID/Depth	Date Sampled	VOCs (µg/L) Method 8260B	Title 22 Metals (µg/L) Method 6010B					PCBs (µg/L) Method 8082
		Methylene Chloride	Aluminum	Barium	Chromium	Lead	Nickel	Aroclor 1260
1294-SB01-5	03/18/05	0.6J	2,310	11.0	4.8J	3.9J	7.3	0.3J

PCB = polychlorinated biphenyl.
µg/kg = microgram per kilogram
VOC = volatile organic compound.

Table 4. Analytical Results for Detected Compounds in Groundwater Samples Collected at Site 1294

Sample ID	Date Sampled	TPH-E (mg/L) Method 8015		Title 22 Metals (µg/L) Method 200.8											
		TPH-D	TPH-MO	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Nickel	Selenium	Thallium
1294-MW01	05/06/05	0.23	0.2J	1,200	2.8J	31.0	5.8J	0.042J	1.2J	10.3	3.0J	0.53J	6.0J	3.6J	0.016J
1294-MW02	05/06/05	0.37	0.4J	2,060	0.56J	12.0	11.4	0.42J	0.85J	2.1J	19.4	0.31J	9.5	1.3J	0.032J
1294-MW03	05/06/05	0.80	0.4J	3,920	0.39J	11.4	13.6	0.19J	0.53J	6.1J	2.7J	0.94J	12.8	6.0J	0.055J

J = Reported between the PQL and MDL.
mg/L = milligrams per liter
TPH-E = total petroleum hydrocarbons, extractables range
µg/kg = microgram per kilogram

Table 5. Analytical Results for Field QA/QC Samples Collected at Site 1294

Sample ID	Date Sampled	TPH-E (mg/L) Method 8015		VOCs (µg/L) Method 8260b
		TPH-D	TPH-MO	
RS-5-6-2005	05/06/05	<0.050	<0.50	ND
1294-TB	05/06/05	NA	NA	ND
SB-5-6-2005	05/06/05	NA	NA	ND
1313-MW02DUP[(a)]	05/06/05	0.28	NA	ND

mg/L = milligrams per liter
NA = not analyzed.
ND = not detected
RS = equipment rinsate sample
SB = source blank
TB = trip blank.
TPH-E = total petroleum hydrocarbons, extractables range
VOC = volatile organic compound
(a) Battelle, 2005.

Table 6. Listing of Maximum Detected Chemical Concentrations in Groundwater at Site 1294 and Associated Screening Levels

Analyte	Maximum Concentration Detected in Groundwater (µg/L)	MCL Action Levels (µg/L) [a]	Analyte	Maximum Concentration Detected in Groundwater (µg/L)	MCL Action Levels (µg/L) [a]
Petroleum Hydrocarbons					
TPH-Extractable	**800**	100[d]	—	—	—
VOCs					
1,1,1,2-Tetrachloroethane	ND	—	Chloromethane	ND	—
1,1,1-Trichloroethane	ND	200	*cis*-1,2-Dichloroethene	ND	70
1,1,2,2-Tetrachloroethane	ND	1	*cis*-1,3-Dichloropropene	ND	0.5[c]
1,1,2-Trichloroethane	ND	5	Dibromochloromethane	ND	80
1,1-Dichloroethane	ND	5[c]	Dibromomethane	ND	—
1,1-Dichloroethene	ND	6[c]	Dichlorodifluoromethane	ND	—
1,1-Dichloropropene	ND	—	Dichloromethane	ND	5
1,2,3-Trichlorobenzene	ND	—	Di-isopropyl ether (DIPE)	ND	—
1,2,3-Trichloropropane	ND	—	Ethylbenzene	ND	300[c]
1,2,4-Trichlorobenzene	ND	5	Ethyl tertiary-butyl ether (ETBE)	ND	—
1,2,4-Trimethylbenzene	ND	—	Hexachlorobutadiene	ND	—
1,2-Dibromoethane	ND	0.05	Isopropylbenzene	ND	—
1,2-Dichlorobenzene	ND	600	*m,p*-Xylene	ND	1,750[b][c]
1,2-Dichloroethane	ND	0.5[c]	Methyl-*tert*-butyl ether (MTBE)	ND	13[c]
1,3,5-Trimethylbenzene	ND	—	Naphthalene	ND	21[e]
1,3-Dichlorobenzene	ND	—	*n*-Butylbenzene	ND	—
1,4-Dichlorobenzene	ND	5[c]	*n*-Propylbenzene	ND	—
2,2-Dichloropropane	ND	—	*o*-Xylene	ND	1,750[b][c]
2-Chlorotoluene	ND	—	4-Isopropyltoluene	ND	—
4-Chlorotoluene	ND	—	*sec*-Butylbenzene	ND	—
Benzene	ND	1[c]	Styrene	ND	100
Bromobenzene	ND	—	*tert*-Butylbenzene	ND	—
Bromochloromethane	ND	—	Tetrachloroethene	ND	5
Bromodichloromethane	ND	100[c]/80[a]	Toluene	ND	150[c]
Bromoform	ND	100[c]/80[a]	Tertiary amyl methyl ether (TAME)	ND	—
Carbon tetrachloride	ND	0.5[c]	*Tertiary* butyl alcohol (TBA)	ND	—
Chlorobenzene	ND	70[c]	*trans*-1,2-Dichloroethene	ND	100

Table 6. Listing of Maximum Detected Chemical Concentrations in Groundwater at Site 1294 and Associated Screening Levels (Continued)

Analyte	Maximum Concentration Detected in Groundwater (µg/L)	MCL Action Levels (µg/L) [(a)]	Analyte	Maximum Concentration Detected in Groundwater (µg/L)	MCL Action Levels (µg/L) [(a)]
Chloroethane	ND	—	*trans*-1,3-Dichloropropene	ND	—
Chloroform	ND	100[(b)]/80[(a)]	Trichloroethene	ND	5
			Trichlorofluoromethane	ND	150[(b)]
			Vinyl chloride	ND	0.5[(b)]
PCBs (b)					
Aroclor 1016	ND	0.5[(b)]	Aroclor 1248	ND	0.5[(b)]
Aroclor 1221	ND	0.5[(b)]	Aroclor 1254	ND	0.5[(b)]
Aroclor 1232	ND	0.5[(b)]	Aroclor 1260	ND	0.5[(b)]
Aroclor 1242	ND	0.5[(b)]	—	—	—
Title 22 Metals (b)					
Aluminum	**3,920**	1,000[(b)]	Chromium (total)	10.3	50[(b)]
Antimony	2.8J	6	Mercury	0.94J	2
Arsenic	31.0	50[(b)]	Nickel	12.8	100[(b)]
Barium	13.6	1,000[(b)]	Selenium	6.0J	50
Beryllium	0.42J	4	Thallium	0.055J	2
Cadmium	1.2J	5	Total Lead	**19.4**	15

(a) U.S. EPA National Primary Drinking Water Standards (U.S. EPA, 2002).
(b) Value is based on California Department of Health Services MCLs (DHS, 2004)
MCL = maximum contaminant level
N/A = Not applicable.
ND = Compound not detected at or above its detection limit.
µg/L = micrograms per liter
Bold = Compound detected above its Action Level.

Table 7. Listing of Maximum Metals Concentrations in Soil at Site 1294 and Background Metals Concentrations

Metals	Soil - 0 to 5 feet (mg/kg) San Luis Rey Basin 95th Percentile	Soil - 0 to 10 feet (mg/kg) San Luis Rey Basin 95th Percentile[a]	Sample ID/Depth (mg/kg) Site 1294 1294-SB01-5
Aluminum	16,398	15,156	5,850
Antimony	8.76[c]	8.38[b]	
Arsenic	17.2	16.0	1.3
Barium	133[c]	385	24.6
Beryllium	1.52[b]	1.42[b]	0.14J
Cadmium	1.58[b]	1.52[b]	
Chromium	15.5	13.2	7.1
Cobalt	13.3[b]	12.8[b]	
Copper	6.5	4.8	
Cyanide	0.24[b]	0.37[b]	
Iron	20,200[d]	19,883	
Lead	11.7	10.2	7.4
Magnesium	6,103	6,150	
Manganese	199[d]	199[d]	
Mercury	0.05[d]	0.05[d]	0.042J
Molybdenum	7.36[b]	7.36[b]	
Nickel	4.8	4.1	4.2
Selenium	0.78[b]	0.80[b]	
Silver	1.36[b]	1.36[b]	
Thallium	1.35[b]	1.33[b]	
Vanadium	39.7	36	
Zinc	56.0	59.7[d]	

mg/kg = milligrams per kilogram

(a) From the Group C RI report (SWDIV, 1996).

(b) The background data set was nondetect for this chemical; therefore, the background concentration calculated for the Santa Margarita Basin was used as a substitute.

(c) The highest detected value was used because the detection limits for nondetects were more than four times the highest detected value.

(d) 95th percentile is higher than the maximum detected value; therefore, the concentration used for background was defaulted to the maximum value.

APPENDIX A

LITHOLOGIC LOGS AND GROUNDWATER MONITORING WELL COMPLETION DIAGRAMS

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SITE 1294, MCB Camp Pendleton
BORING LOG - SITE 1294-SB01/MW02

Borehole Location: Site 1294	Sampler Type: 18" SS 2.0" I.D.	Northing (NAD 83): 2061755.018
Project Location: MCB Camp Pendleton Project #: G605504 Geologist: Tom Worthington Drilling Contractor: Baja Exploration Driller: Dave Hogan Reviewed by: David Clexton #7350	Boring Diameter: 8" Drilling Method" HSA Drill Rig: CME 750 Hammer Type: 140 lb. Date: 03/18/2005 Total Depth: 30' bgs	Easting (NAD 83): 6236894.650 Surface Elevation (NAVD 88): 289.93 Borehole Abandoned: __ Yes X No Backfill Method: N/A Monitoring Device Installed: X Yes __ No Type: 2" Schedule 40 PVC

Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	FID (ppm)	Blow Counts	Boring Completion	Comments
0		DG	Backfill: GRAVELS, SAND,CLAY, etc.				Hand augered to 5' bgs 0'-2'4" Surface seal: Concrete (1 ft³)
5			Decomposed granite with clay, olive gray to gray, moist, hard, slight hydrocarbon odor.	48	63		0'-2.5' Casing 2'4" - 2'5" Seal: bentonite chips (0.3 ft³)
10		SC	Santiago Formation: Clayey SAND; gray to dark gray, moist, hard, iron oxide staining, organic odor, fine grained.	25	32 36 50		2'5"-9'6" Filter Pack: #3 Sand (3ft³) 2'6"-7'6"Well Screen: 0.020-inch slot
15		ML	Clayey SILT; greenish gray, damp, hard, iron oxide staining slight organic odor.	22	29 50		9'6" - 30' Seal: bentonite chips (8 ft³)
20			Clayey SILT; greenish gray, dry, hard, iron oxide staining.	8.4	60 /6"		
25			Same	3.4	56 /6"		
30			Clayey SILT; greenish gray, dry, hard, some iron oxide staining, trace grained sand.	3.6	63 /6"		
35			TOTAL DEPTH= 30'				
40							
45							
50							
55							
60							

1294-SB01/MW02.CDR

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SITE 1294, MCB Camp Pendleton
BORING LOG - SITE 1294-SB02/MW01

Borehole Location: Site 1294 Project Location: MCB Camp Pendleton Project #: G605504 Geologist: Tom Worthington Drilling Contractor: Baja Exploration Driller: Dave Hogan Reviewed by: David Clexton #7350	Sampler Type: 18" SS 2.0" I.D. Boring Diameter: 8" Drilling Method" HSA Drill Rig: CME 750 Hammer Type: 140 lb. Date: 03/18/2005 Total Depth: 30' bgs	Northing (NAD 83): 2061755.159 Easting (NAD 83): 6236922.392 Surface Elevation (NAVD 88): 289.97 Borehole Abandoned: __ Yes _X_ No Backfill Method: N/A Monitoring Device Installed: _X_ Yes __ No Type: 2" Schedule 40 PVC

Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	FID (ppm)	Blow Counts	Boring Completion	Comments
0		GC	Base: GRAVELS, SAND,CLAY, etc.				Hand augered to 5' bgs 0'-2'4"' Surface seal: Concrete (1 ft^3)
5		SM	FILL; Silty Sand, yellowish brown, moist, very dense.	0	35 50		0'-2.5' Casing 2'4" - 2'5" Seal: bentonite chips (0.3 ft^3)
10		ML	Santiago Formation: Clayey SILT; greenish gray, dry, hard, iron oxide staining.	0	32 50		2'5"-9'6" Filter Pack: #3 Sand (3ft^3) 2'6"-7'6"'Well Screen: 0.020-inch slot
15			Same	0	40 50		9'6" - 30' Seal: bentonite chips (8 ft^3)
20			Clayey SILT; greenish gray, dry, hard, iron oxide staining, trace fine grained sand.	0	52 /6"		
25			Same	0	60 /6"		
30		ML	Same TOTAL DEPTH = 30'	0	63 /6"		
35							
40							
45							
50							
55							
60							

1294-SB02/MW01.CDR

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SITE 1294, MCB Camp Pendleton
BORING LOG - SITE 1294-SB03/MW03

Borehole Location: Site 1294
Project Location: MCB Camp Pendleton
Project #: G605504
Geologist: Tom Worthington
Drilling Contractor: J.E.T Drilling
Driller: Dave Hogan
Reviewed by: David Clexton

Sampler Type: 18" SS 2.0" I.D.
Boring Diameter: 8"
Drilling Method" HSA
Drill Rig: LAR CME 750
Hammer Type: 140 lb.
Date: 03/22/2005
Total Depth: 30' bgs

Northing (NAD 83): 2061789.109
Easting (NAD 83): 6236903.919
Surface Elevation (NAVD 88): 290.10
Borehole Abandoned: __ Yes X No
Backfill Method: N/A
Monitoring Device Installed: X Yes __ No
Type: 2" Schedule 40 PVC

Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	FID (ppm)	Blow Counts	Boring Completion	Comments
0		GC	Asphalt Surface Base; Gravel, Sand, Silt, yellowish brown, damp, soft.				Hand augered to 5' bgs 0'-2'4" Surface seal: Concrete (1 ft^3)
5		SM	Silty SAND; greenish gray, damp, very dense, fine to medium grained.	0	19 50		0'-2.5' Casing 2'4" - 2'5" Seal: bentonite chips (0.3 ft^3)
10		ML	Santiago Formation: Clayey SILT; greenish gray, damp, hard, iron oxide staining.	0	28 50		2'5"-9'6" Filter Pack: #3 Sand (3ft^3) 2'6"-7'6"Well Screen: 0.020-inch slot
15			SILT; greenish gray, dry to damp, hard, iron oxide staining, trace clay.	0	15 50		9'6" - 30' Seal: bentonite chips (8 ft^3)
20			Same	0	38 50 /4"		
25			SILT; gray, dry, hard, micaceous, trace gravel.	0	40 50 /4"		
30		ML	SILT; greenish gray, dry, hard, trace medium to coarse grained sand. TOTAL DEPTH = 30'	0	14 50 /4"		
35							
40							
45							
50							
55							
60							

1294-SB03/MW03.CDR

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SITE 1294, MCB Camp Pendleton
BORING LOG - SITE 1294-SB04

Borehole Location: Site 1294 Project Location: MCB Camp Pendleton Project #: G605504 Geologist: Tom Worthington Drilling Contractor: J.E.T Drilling Driller: Dave Hogan Reviewed by: David Clexton # 7350	Sampler Type: 18" SS 2.0" I.D. Boring Diameter: 8" Drilling Method" HSA Drill Rig: LAR CME 750 Hammer Type: 140 lb. Date: 03/22/2005 Total Depth: 30' bgs	Northing (NAD 83): 2061755.526 Easting (NAD 83): 6236876.996 Surface Elevation (NAVD 88): 289.77 Borehole Abandoned: X Yes __No Backfill Method: Bentonite Grout Monitoring Device Installed:__Yes X No Type: NA

Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	FID (ppm)	Blow Counts	Boring Completion	Comments
0							Hand augered to 5' bgs
▼		SM	Silty SAND; yellowish brown, damp,dense, medium grained.	0	50		
5							
			Santiago Formation:				
			Clayey SILT; greenish gray, dry to damp, hard, micaceous, iron oxide staining.	0	24 50 /4"		0'-30' Backfill: Bentonite Grout (11 ft^3)
10		ML					
			Clayey SILT; greenish gray, dry to damp, hard, iron oxide staining.	0	25 50 /5"		
15							
			Same	0	14 50 /6"		
20							
			SILT; gray, dry to damp, hard, micaceous.	0	28 50 /5"		
25		ML					
			SILT; greenish gray, dry, hard, few medium to coarse grained sand.	0	14 50 /4"		
30			TOTAL DEPTH = 30'				
35							
40							
45							
50							
55							
60							

1294-SB04.CDR

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SITE 1294, MCB Camp Pendleton
BORING LOG - SITE 1294-SB05

Borehole Location: Site 1294 Project Location: MCB Camp Pendleton Project #: G605504 Geologist: Tom Worthington Drilling Contractor: Baja Exploration Driller: Dave Hogan Reviewed by: David Clexton #7350	Sampler Type: 18" SS 2.0" I.D. Boring Diameter: 8" Drilling Method" HSA Drill Rig: CME 750 Hammer Type: 140 lb. Date: 03/31/2005 Total Depth: 30' bgs	Northing (NAD 83): 2061733.144 Easting (NAD 83): 6236893.649 Surface Elevation (NAVD 88): 294.79 Borehole Abandoned: X Yes __No Backfill Method: Bentonite Grout Monitoring Device Installed:__Yes X No Type: NA

Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	FID (ppm)	Blow Counts	Boring Completion	Comments
0		GC	FILL; Silt, Sand, yellowish brown, damp, soft.				Hand augered to 5' bgs
5			Santiago Formation: Clayey SILT; buff to light gray, moist, hard, clayey lenses, iron oxide staining, trace fine grain sand.	0	8 9 12		
10		SW	SAND; buff to light gray, dense, damp to moist, medium grained, few coarse grained.	0	14 16 20		0'-35' Backfill: Bentonite Grout (13 ft^3)
15			SAND; buff, dense, damp to moist, medium grained.	0	40 55 /6"		
20		ML	Clayey SILT; greenish gray, dry to damp, hard, some iron oxide staining.	0	29 54 /6"		
25			Same	0	18 16 25		
30		ML	Clayey SILT; greenish gray, dry, hard.	0	56 50 /2"		
35			Sandy SILT; greenish gray, dry, loose, medium to coarse grained.	0	50 58 /4"		
			TOTAL DEPTH = 35'				
40							
45							
50							
55							
60							

1294-SB05.CDR

APPENDIX B

LABORATORY ANALYTICAL REPORTS, CHAIN-OF-CUSTODY DOCUMENTATION, AND LABORATORY QUALITY ASSURANCE/QUALITY CONTROL DATA

Applied P & CH Laboratories
13760 Magnolia Ave., Chino, CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
Battelle - Columbus Operations
Attention: Thomas Worthington.
505 King Avenue
Columbus OH 43201
Tel: (619)574-4826 Fax: (760)385-4613

Service ID #: 801-051959
Collected by: TW/DJ
Collected on: 03/18/05

Received: 03/19/05
Extracted: 03/21-30/05
Tested: 03/22-04/04/05
Reported: 04/08/05

Sample Description: Soil
Project Description: G605504

Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-SB01-5 05-01959-1	1294-SB01-10 05-01959-2	1294-SB01-15 05-01959-3	1294-SB01-20 05-01959-4
MOISTURE	ASTM-D2216	%Moisture	0.5	10.1	13.6	23.7	12.7
Dilution Factor				20	1	1	1
PHC AS DIESEL FUEL	M8015E	mg/kg	5	2,350 [a]	<5.8	<6.6	<5.7
Dilution Factor				20	1	1	1
MOTOR OILS	M8015E	mg/kg	10	3,300	<12	<13	<11

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-SB01-25 05-01959-5	1294-SB01-30 05-01959-6	1294-SB02-5 05-01959-7	1294-SB02-10 05-01959-8
MOISTURE	ASTM-D2216	%Moisture	0.5	12.6	16.6	10.7	14.9
Dilution Factor				1	1	1	1
PHC AS DIESEL FUEL	M8015E	mg/kg	5	<5.7	<6.0	<5.6	<5.9
Dilution Factor				1	1	1	1
MOTOR OILS	M8015E	mg/kg	10	3J	<12	3J	<12

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-SB02-15 05-01959-9	1294-SB02-20 05-01959-10	1294-SB02-25 05-01959-11	1294-SB02-30 05-01959-12
MOISTURE	ASTM-D2216	%Moisture	0.5	19.6	12.3	13.1	21.6
Dilution Factor				1	1	1	1
PHC AS DIESEL FUEL	M8015E	mg/kg	5	<6.2	<5.7	<5.8	<6.4
Dilution Factor				1	1	1	1
MOTOR OILS	M8015E	mg/kg	10	<12	<11	1J	<13

Applied P & CH Laboratories
13760 Magnolia Ave., Chino, CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-SB01-5 05-01959-1
METALS [b]				
Dilution Factor				1
ALUMINUM	6010B	mg/kg	2	5,850
ANTIMONY	6010B	mg/kg	0.1 [c]	<0.11
ARSENIC	6010B	mg/kg	1	1.3
BARIUM	6010B	mg/kg	1	24.6
BERYLLIUM	6010B	mg/kg	1	0.14J
CADMIUM	6010B	mg/kg	1	<1.1
CHROMIUM	6010B	mg/kg	1	7.1
LEAD	6010B	mg/kg	1	7.4
MERCURY	7471A	mg/kg	1	0.042J
NICKEL	6010B	mg/kg	1	4.2
SELENIUM	6010B	mg/kg	1	<1.1
THALLIUM	6010B	mg/kg	1	<1.1
Dilution Factor				1
ORGANIC LEAD [b]	LUFT	mg/kg	1	<1.1
SPLP METALS [b]				
Dilution Factor				1
ALUMINUM	6010B	µg/L	200	2,310
ANTIMONY	6010B	µg/L	2 [c]	<2
ARSENIC	6010B	µg/L	5	<5
BARIUM	6010B	µg/L	5	11.0
BERYLLIUM	6010B	µg/L	4	<4
CADMIUM	6010B	µg/L	5	<5
CHROMIUM	6010B	µg/L	5	4.8J
LEAD	6010B	µg/L	5	3.9J
MERCURY	7470A	µg/L	1	<1
NICKEL	6010B	µg/L	5	7.3
SELENIUM	6010B	µg/L	10	<10
THALLIUM	6010B	µg/L	10	<10
VOLATILE ORGANICS [b]				
Dilution Factor				0.91
BENZENE	8260B	µg/kg	5	<5.1
BROMOBENZENE	8260B	µg/kg	20	<20
BROMOCHLOROMETHANE	8260B	µg/kg	20	<20
BROMODICHLOROMETHANE	8260B	µg/kg	20	<20
BROMOFORM	8260B	µg/kg	20	<20
BROMOMETHANE	8260B	µg/kg	20	<20
N-BUTYLBENZENE	8260B	µg/kg	20	<20
SEC-BUTYLBENZENE	8260B	µg/kg	20	<20
T-BUTYLBENZENE	8260B	µg/kg	20	<20
CARBON TETRACHLORIDE	8260B	µg/kg	20	<20
CHLOROBENZENE	8260B	µg/kg	20	<20
DIBROMOCHLOROMETHANE	8260B	µg/kg	20	<20
CHLOROETHANE	8260B	µg/kg	20	<20
CHLOROFORM	8260B	µg/kg	20	<20
CHLOROMETHANE	8260B	µg/kg	40	<40

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APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-SB01-5 05-01959-1
2-CHLOROTOLUENE	8260B	µg/kg	20	< 20
4-CHLOROTOLUENE	8260B	µg/kg	20	< 20
1,2-DIBROMOETHANE	8260B	µg/kg	40	< 40
DIBROMOMETHANE	8260B	µg/kg	20	< 20
1,2-DICHLOROBENZENE	8260B	µg/kg	20	< 20
1,3-DICHLOROBENZENE	8260B	µg/kg	20	< 20
1,4-DICHLOROBENZENE	8260B	µg/kg	20	< 20
DICHLORODIFLUOROMETHANE	8260B	µg/kg	20	< 20
1,1-DICHLOROETHANE	8260B	µg/kg	20	< 20
1,2-DICHLOROETHANE	8260B	µg/kg	20	< 20
1,1-DICHLOROETHENE	8260B	µg/kg	20	< 20
CIS-1,2-DICHLOROETHENE	8260B	µg/kg	20	< 20
TRANS-1,2-DICHLOROETHENE	8260B	µg/kg	20	< 20
1,2-DICHLOROPROPANE	8260B	µg/kg	20	< 20
2,2-DICHLOROPROPANE	8260B	µg/kg	20	< 20
1,1-DICHLOROPROPENE	8260B	µg/kg	20	< 20
CIS-1,3-DICHLOROPROPENE	8260B	µg/kg	20	< 20
TRANS-1,3-DICHLOROPROPENE	8260B	µg/kg	20	< 20
ETHYLBENZENE	8260B	µg/kg	5	< 5.1
HEXACHLOROBUTADIENE	8260B	µg/kg	40	< 40
ISOPROPYLBENZENE	8260B	µg/kg	5	< 5.1
4-ISOPROPYLTOLUENE	8260B	µg/kg	20	< 20
METHYLENE CHLORIDE	8260B	µg/kg	40	0.9J
METHYL-TERT-BUTYL ETHER (MTBE)	8260B	µg/kg	5	< 5.1
NAPHTHALENE	8260B	µg/kg	40	< 40
N-PROPYLBENZENE	8260B	µg/kg	20	< 20
STYRENE	8260B	µg/kg	20	< 20
1,1,1,2-TETRACHLOROETHANE	8260B	µg/kg	20	< 20
1,1,2,2-TETRACHLOROETHANE	8260B	µg/kg	20	< 20
TETRACHLOROETHENE	8260B	µg/kg	20	< 20
TOLUENE	8260B	µg/kg	5	< 5.1
1,2,3-TRICHLOROBENZENE	8260B	µg/kg	40	< 40
1,2,4-TRICHLOROBENZENE	8260B	µg/kg	40	< 40
1,1,1-TRICHLOROETHANE	8260B	µg/kg	20	< 20
1,1,2-TRICHLOROETHANE	8260B	µg/kg	20	< 20
TRICHLOROETHENE	8260B	µg/kg	20	< 20
TRICHLOROFLUOROMETHANE	8260B	µg/kg	20	< 20
1,2,3-TRICHLOROPROPANE	8260B	µg/kg	40	< 40
1,2,4-TRIMETHYLBENZENE	8260B	µg/kg	20	< 20
1,3,5-TRIMETHYLBENZENE	8260B	µg/kg	20	< 20
VINYL CHLORIDE	8260B	µg/kg	20	< 20
O-XYLENE	8260B	µg/kg	5	< 5.1
M,P-XYLENE	8260B	µg/kg	5	< 5.1
T-BUTYL ALCOHOL (TBA)	8260B	µg/kg	500	< 510
DIISOPROPYL ETHER (DIPE)	8260B	µg/kg	20	1J
ETHYL-T-BUTYL ETHER (ETBE)	8260B	µg/kg	20	< 20
T-AMYL METHYL ETHER (TAME)	8260B	µg/kg	20	< 20

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APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-SB01-5 05-01959-1
SPLP VOLATILE ORGANICS (b)				
Dilution Factor				1
BENZENE	8260B	µg/L	0.5	<0.5
BROMOBENZENE	8260B	µg/L	1	<1
BROMOCHLOROMETHANE	8260B	µg/L	1	<1
BROMODICHLOROMETHANE	8260B	µg/L	1	<1
BROMOFORM	8260B	µg/L	1	<1
BROMOMETHANE	8260B	µg/L	1	<1
N-BUTYLBENZENE	8260B	µg/L	1	<1
SEC-BUTYLBENZENE	8260B	µg/L	1	<1
T-BUTYLBENZENE	8260B	µg/L	1	<1
CARBON TETRACHLORIDE	8260B	µg/L	1	<1
CHLOROBENZENE	8260B	µg/L	1	<1
DIBROMOCHLOROMETHANE	8260B	µg/L	1	<1
CHLOROETHANE	8260B	µg/L	1	<1
CHLOROFORM	8260B	µg/L	1	<1
CHLOROMETHANE	8260B	µg/L	2	<2
2-CHLOROTOLUENE	8260B	µg/L	1	<1
4-CHLOROTOLUENE	8260B	µg/L	1	<1
1,2-DIBROMOETHANE	8260B	µg/L	2	<2
DIBROMOMETHANE	8260B	µg/L	1	<1
1,2-DICHLOROBENZENE	8260B	µg/L	1	<1
1,3-DICHLOROBENZENE	8260B	µg/L	1	<1
1,4-DICHLOROBENZENE	8260B	µg/L	1	<1
DICHLORODIFLUOROMETHANE	8260B	µg/L	1	<1
1,1-DICHLOROETHANE	8260B	µg/L	1	<1
1,2-DICHLOROETHANE	8260B	µg/L	1	<1
1,1-DICHLOROETHENE	8260B	µg/L	1	<1
CIS-1,2-DICHLOROETHENE	8260B	µg/L	1	<1
TRANS-1,2-DICHLOROETHENE	8260B	µg/L	1	<1
1,2-DICHLOROPROPANE	8260B	µg/L	5	<5
2,2-DICHLOROPROPANE	8260B	µg/L	1	<1
1,1-DICHLOROPROPENE	8260B	µg/L	1	<1
CIS-1,3-DICHLOROPROPENE	8260B	µg/L	1	<1
TRANS-1,3-DICHLOROPROPENE	8260B	µg/L	1	<1
ETHYLBENZENE	8260B	µg/L	0.5	<0.5
HEXACHLOROBUTADIENE	8260B	µg/L	2	<2
ISOPROPYLBENZENE	8260B	µg/L	1	<1
4-ISOPROPYLTOLUENE	8260B	µg/L	1	<1
METHYLENE CHLORIDE	8260B	µg/L	2	0.6J
METHYL-TERT-BUTYL ETHER (MTBE)	8260B	µg/L	0.5	<0.5

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APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-SB01-5 05-01959-1
NAPHTHALENE	8260B	µg/L	2	<2
N-PROPYLBENZENE	8260B	µg/L	1	<1
STYRENE	8260B	µg/L	1	<1
1,1,1,2-TETRACHLOROETHANE	8260B	µg/L	1	<1
1,1,2,2-TETRACHLOROETHANE	8260B	µg/L	1	<1
TETRACHLOROETHENE	8260B	µg/L	1	<1
TOLUENE	8260B	µg/L	0.5	<0.5
1,2,3-TRICHLOROBENZENE	8260B	µg/L	2	<2
1,2,4-TRICHLOROBENZENE	8260B	µg/L	2	<2
1,1,1-TRICHLOROETHANE	8260B	µg/L	1	<1
1,1,2-TRICHLOROETHANE	8260B	µg/L	1	<1
TRICHLOROETHENE	8260B	µg/L	1	<1
TRICHLOROFLUOROMETHANE	8260B	µg/L	1	<1
1,2,3-TRICHLOROPROPANE	8260B	µg/L	2	<2
1,2,4-TRIMETHYLBENZENE	8260B	µg/L	1	<1
1,3,5-TRIMETHYLBENZENE	8260B	µg/L	1	<1
VINYL CHLORIDE	8260B	µg/L	1	<1
O-XYLENE	8260B	µg/L	0.5	<0.5
M,P-XYLENE	8260B	µg/L	1	<1
T-BUTYL ALCOHOL (TBA)	8260B	µg/L	20	<20
DIISOPROPYL ETHER (DIPE)	8260B	µg/L	5	<5
ETHYL-T-BUTYL ETHER (ETBE)	8260B	µg/L	5	<5
T-AMYL METHYL ETHER (TAME)	8260B	µg/L	5	<5
PCBS [b]				
Dilution Factor				1
PCB-1016 (AROCLOR 1016)	8082	µg/kg	33	<37
PCB-1221 (AROCLOR 1221)	8082	µg/kg	33	<37
PCB-1232 (AROCLOR 1232)	8082	µg/kg	33	<37
PCB-1242 (AROCLOR 1242)	8082	µg/kg	33	<37
PCB-1248 (AROCLOR 1248)	8082	µg/kg	33	<37
PCB-1254 (AROCLOR 1254)	8082	µg/kg	33	<37
PCB-1260 (AROCLOR 1260)	8082	µg/kg	33	8J

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APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-SB01-5 05-01959-1
SPLP PCBS [b]				
Dilution Factor				1
PCB-1016 (AROCLOR 1016)	8082	µg/L	1	<1
PCB-1221 (AROCLOR 1221)	8082	µg/L	1	<1
PCB-1232 (AROCLOR 1232)	8082	µg/L	1	<1
PCB-1242 (AROCLOR 1242)	8082	µg/L	1	<1
PCB-1248 (AROCLOR 1248)	8082	µg/L	1	<1
PCB-1254 (AROCLOR 1254)	8082	µg/L	1	<1
PCB-1260 (AROCLOR 1260)	8082	µg/L	1	0.3J

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.

J: Reported between PQL and MDL.

† All results are reported on dry basis for soil samples.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

[a] Not a Diesel pattern, mixture in Jet Fuel Range.

[b] Additional analysis requested on 04/01-04/04/05.

[c] IDL reported.

Respectfully submitted,

Dominic Lau
Laboratory Director
Applied P & CH Laboratories

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APCL Analytical Report

Submitted to:
Battelle - Columbus Operations
Attention: Tom Worthington
3990 Old Town Ave, Suite B-104.
San Diego CA 92110
Tel: (619)574-4826 Fax: (760)385-4613

Service ID #: 801-052013
Collected by: DJ/TW
Collected on: 03/22/05

Received: 03/23/05
Extracted: 03/25/05
Tested: 03/25-26/05
Reported: 03/30/05

Sample Description: Soil
Project Description: G605504

Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-SB03-5 05-02013-1	1294-SB03-10 05-02013-2	1294-SB03-15 05-02013-3	1294-SB03-20 05-02013-4
MOISTURE	ASTM-D2216	%Moisture	0.5	10.6	11.4	18.9	12.3
Dilution Factor				1	1	1	1
PHC AS DIESEL FUEL	M8015E	mg/kg	5	< 5.6	< 5.6	< 6.2	< 5.7
Dilution Factor				1	1	1	1
MOTOR OILS	M8015E	mg/kg	10	< 11	8J	< 12	< 11

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-SB03-25 05-02013-5	1294-SB03-30 05-02013-6	1294-SB04-5 05-02013-7	1294-SB04-10 05-02013-8
MOISTURE	ASTM-D2216	%Moisture	0.5	9.0	11.2	9.2	13.7
Dilution Factor				1	1	1	1
PHC AS DIESEL FUEL	M8015E	mg/kg	5	< 5.5	< 5.6	< 5.5	< 5.8
Dilution Factor				1	1	1	1
MOTOR OILS	M8015E	mg/kg	10	< 11	< 11	2J	< 12

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-SB04-15 05-02013-9	1294-SB04-20 05-02013-10	1294-SB04-25 05-02013-11
MOISTURE	ASTM-D2216	%Moisture	0.5	16.4	15.3	11.7
Dilution Factor				1	1	1
PHC AS DIESEL FUEL	M8015E	mg/kg	5	< 6.0	< 5.9	< 5.7
Dilution Factor				1	1	1
MOTOR OILS	M8015E	mg/kg	10	< 12	< 12	< 11

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APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-SB04-30 05-02013-12	1313-SB07-15 05-02013-13	1313-SB08-18 05-02013-14
MOISTURE	ASTM-D2216	%Moisture	0.5	14.4	11.0	9.0
Dilution Factor				1	1	1
PHC AS DIESEL FUEL	M8015E	mg/kg	5	< 5.8	< 5.6	< 5.5
Dilution Factor				1	1	1
MOTOR OILS	M8015E	mg/kg	10	< 12	-	-

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.

J: Reported between PQL and MDL.

† All results are reported on dry basis for soil samples.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

Dominic Law
Laboratory Director
Applied P & CH Laboratories

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APCL Analytical Report

Submitted to:
Battelle - Columbus Operations
Attention: Tom Worthington
3990 Old Town Ave, Suite C-205.
San Diego CA 92110
Tel: (619)574-4826 Fax: (619)260-0882

Service ID #: 801-052658
Collected by: Scott Lowe
Collected on: 05/06-09/05

Received: 05/10/05
Extracted: 05/11-12/05
Tested: 05/11-19/05
Reported: 05/25/05

Sample Description: Water from Areas 12 and 13
Project Description: TO-0003 Camp Pendleton

Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-MW01 05-02658-1	1294-MW02 05-02658-2	1294-MW03 05-02658-3
Dilution Factor				1.25	1.25	1.25
ALUMINUM	200.8	µg/L	200	1,200	2,060	3,920
ANTIMONY	200.8	µg/L	5	2.8J	0.56J	0.39J
ARSENIC	200.8	µg/L	5	31.0	12.0	11.4
BARIUM	200.8	µg/L	5	5.8J	11.4	13.6
BERYLLIUM	200.8	µg/L	4	0.042J	0.42J	0.19J
CADMIUM	200.8	µg/L	5	1.2J	0.85J	0.53J
CHROMIUM	200.8	µg/L	5	10.3	2.1J	6.1J
LEAD	200.8	µg/L	5	3.0J	19.4	2.7J
MERCURY	200.8	µg/L	1	0.53J	0.31J	0.94J
NICKEL	200.8	µg/L	5	6.0J	9.5	12.8
SELENIUM	200.8	µg/L	5	3.6J	1.3J	6.0J
THALLIUM	200.8	µg/L	2	0.016J	0.032J	0.055J
Dilution Factor				1	1	1
PHC AS DIESEL FUEL	M8015E	mg/L	0.05	0.23	0.37	0.80
Dilution Factor				1	1	1
MOTOR OILS	M8015E	mg/L	0.5	0.2J	0.4J	0.4J
PCBS						
Dilution Factor				1	1	1
PCB-1016 (AROCLOR 1016)	8082	µg/L	1	-	<1	-
PCB-1221 (AROCLOR 1221)	8082	µg/L	1	-	<1	-
PCB-1232 (AROCLOR 1232)	8082	µg/L	1	-	<1	-
PCB-1242 (AROCLOR 1242)	8082	µg/L	1	-	<1	-
PCB-1248 (AROCLOR 1248)	8082	µg/L	1	-	<1	-
PCB-1254 (AROCLOR 1254)	8082	µg/L	1	-	<1	-
PCB-1260 (AROCLOR 1260)	8082	µg/L	1	-	<1	-

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APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-MW02 05-02658-2	MB-5-6-2005 05-02658-4	RS-5-6-2005 05-02658-5
VOLATILE ORGANICS						
Dilution Factor				1	1	1
BENZENE	8260B	µg/L	0.5	<0.5	<0.5	<0.5
BROMOBENZENE	8260B	µg/L	1	<1	<1	<1
BROMOCHLOROMETHANE	8260B	µg/L	1	<1	<1	<1
BROMODICHLOROMETHANE	8260B	µg/L	1	<1	<1	<1
BROMOFORM	8260B	µg/L	1	<1	<1	<1
BROMOMETHANE	8260B	µg/L	1	<1	<1	<1
N-BUTYLBENZENE	8260B	µg/L	1	<1	<1	<1
SEC-BUTYLBENZENE	8260B	µg/L	1	<1	<1	<1
T-BUTYLBENZENE	8260B	µg/L	1	<1	<1	<1
CARBON TETRACHLORIDE	8260B	µg/L	1	<1	<1	<1
CHLOROBENZENE	8260B	µg/L	1	<1	<1	<1
DIBROMOCHLOROMETHANE	8260B	µg/L	1	<1	<1	<1
CHLOROETHANE	8260B	µg/L	1	<1	<1	<1
CHLOROFORM	8260B	µg/L	1	<1	<1	<1
CHLOROMETHANE	8260B	µg/L	2	<2	<2	<2
2-CHLOROTOLUENE	8260B	µg/L	1	<1	<1	<1
4-CHLOROTOLUENE	8260B	µg/L	1	<1	<1	<1
1,2-DIBROMOETHANE	8260B	µg/L	2	<2	<2	<2
DIBROMOMETHANE	8260B	µg/L	1	<1	<1	<1
1,2-DICHLOROBENZENE	8260B	µg/L	1	<1	<1	<1
1,3-DICHLOROBENZENE	8260B	µg/L	1	<1	<1	<1
1,4-DICHLOROBENZENE	8260B	µg/L	1	<1	<1	<1
DICHLORODIFLUOROMETHANE	8260B	µg/L	1	<1	<1	<1
1,1-DICHLOROETHANE	8260B	µg/L	1	<1	<1	<1
1,2-DICHLOROETHANE	8260B	µg/L	1	<1	<1	<1
1,1-DICHLOROETHENE	8260B	µg/L	1	<1	<1	<1
CIS-1,2-DICHLOROETHENE	8260B	µg/L	1	<1	<1	<1
TRANS-1,2-DICHLOROETHENE	8260B	µg/L	1	<1	<1	<1
1,2-DICHLOROPROPANE	8260B	µg/L	5	<5	<5	<5
2,2-DICHLOROPROPANE	8260B	µg/L	1	<1	<1	<1
1,1-DICHLOROPROPENE	8260B	µg/L	1	<1	<1	<1
CIS-1,3-DICHLOROPROPENE	8260B	µg/L	1	<1	<1	<1
TRANS-1,3-DICHLOROPROPENE	8260B	µg/L	1	<1	<1	<1
ETHYLBENZENE	8260B	µg/L	0.5	<0.5	<0.5	<0.5
HEXACHLOROBUTADIENE	8260B	µg/L	2	<2	<2	<2
ISOPROPYLBENZENE	8260B	µg/L	1	<1	<1	<1
4-ISOPROPYLTOLUENE	8260B	µg/L	1	<1	<1	<1
METHYLENE CHLORIDE	8260B	µg/L	2	<2	<2	<2
METHYL-TERT-BUTYL ETHER (MTBE)	8260B	µg/L	0.5	<0.5	<0.5	<0.5

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APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result 1294-MW02 05-02658-2	MB-5-6-2005 05-02658-4	RS-5-6-2005 05-02658-5
NAPHTHALENE	8260B	µg/L	2	<2	<2	<2
N-PROPYLBENZENE	8260B	µg/L	1	<1	<1	<1
STYRENE	8260B	µg/L	1	<1	<1	<1
1,1,1,2-TETRACHLOROETHANE	8260B	µg/L	1	<1	<1	<1
1,1,2,2-TETRACHLOROETHANE	8260B	µg/L	1	<1	<1	<1
TETRACHLOROETHENE	8260B	µg/L	1	<1	<1	<1
TOLUENE	8260B	µg/L	0.5	<0.5	<0.5	<0.5
1,2,3-TRICHLOROBENZENE	8260B	µg/L	2	<2	<2	<2
1,2,4-TRICHLOROBENZENE	8260B	µg/L	2	<2	<2	<2
1,1,1-TRICHLOROETHANE	8260B	µg/L	1	<1	<1	<1
1,1,2-TRICHLOROETHANE	8260B	µg/L	1	<1	<1	<1
TRICHLOROETHENE	8260B	µg/L	1	<1	<1	<1
TRICHLOROFLUOROMETHANE	8260B	µg/L	1	<1	<1	<1
1,2,3-TRICHLOROPROPANE	8260B	µg/L	2	<2	<2	<2
1,2,4-TRIMETHYLBENZENE	8260B	µg/L	1	<1	<1	<1
1,3,5-TRIMETHYLBENZENE	8260B	µg/L	1	<1	<1	<1
VINYL CHLORIDE	8260B	µg/L	1	<1	<1	<1
O-XYLENE	8260B	µg/L	0.5	<0.5	<0.5	<0.5
M,P-XYLENE	8260B	µg/L	1	<1	<1	<1
T-BUTYL ALCOHOL (TBA)	8260B	µg/L	20	<20	<20	<20
DIISOPROPYL ETHER (DIPE)	8260B	µg/L	5	<5	<5	<5
ETHYL-T-BUTYL ETHER (ETBE)	8260B	µg/L	5	<5	<5	<5
T-AMYL METHYL ETHER (TAME)	8260B	µg/L	5	<5	<5	<5

Component Analyzed	Method	Unit	PQL	Analysis Result SB-5-6-2005 05-02658-6	TB-2 05-02658-8	TB-1 05-02658-9
VOLATILE ORGANICS						
Dilution Factor				1	1	1
BENZENE	8260B	µg/L	0.5	<0.5	<0.5	<0.5
BROMOBENZENE	8260B	µg/L	1	<1	<1	<1
BROMOCHLOROMETHANE	8260B	µg/L	1	<1	<1	<1
BROMODICHLOROMETHANE	8260B	µg/L	1	<1	<1	<1
BROMOFORM	8260B	µg/L	1	<1	<1	<1
BROMOMETHANE	8260B	µg/L	1	<1	<1	<1
N-BUTYLBENZENE	8260B	µg/L	1	<1	<1	<1
SEC-BUTYLBENZENE	8260B	µg/L	1	<1	<1	<1
T-BUTYLBENZENE	8260B	µg/L	1	<1	<1	<1
CARBON TETRACHLORIDE	8260B	µg/L	1	<1	<1	<1
CHLOROBENZENE	8260B	µg/L	1	<1	<1	<1
DIBROMOCHLOROMETHANE	8260B	µg/L	1	<1	<1	<1
CHLOROETHANE	8260B	µg/L	1	<1	<1	<1
CHLOROFORM	8260B	µg/L	1	<1	<1	<1
CHLOROMETHANE	8260B	µg/L	2	<2	<2	<2
2-CHLOROTOLUENE	8260B	µg/L	1	<1	<1	<1
4-CHLOROTOLUENE	8260B	µg/L	1	<1	<1	<1
1,2-DIBROMOETHANE	8260B	µg/L	2	<2	<2	<2

Applied P & CH Laboratories
13760 Magnolia Ave., Chino, CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result SB-5-6-2005 05-02658-6	TB-2 05-02658-8	TB-1 05-02658-9
DIBROMOMETHANE	8260B	µg/L	1	<1	<1	<1
1,2-DICHLOROBENZENE	8260B	µg/L	1	<1	<1	<1
1,3-DICHLOROBENZENE	8260B	µg/L	1	<1	<1	<1
1,4-DICHLOROBENZENE	8260B	µg/L	1	<1	<1	<1
DICHLORODIFLUOROMETHANE	8260B	µg/L	1	<1	<1	<1
1,1-DICHLOROETHANE	8260B	µg/L	1	<1	<1	<1
1,2-DICHLOROETHANE	8260B	µg/L	1	<1	<1	<1
1,1-DICHLOROETHENE	8260B	µg/L	1	<1	<1	<1
CIS-1,2-DICHLOROETHENE	8260B	µg/L	1	<1	<1	<1
TRANS-1,2-DICHLOROETHENE	8260B	µg/L	1	<1	<1	<1
1,2-DICHLOROPROPANE	8260B	µg/L	5	<5	<5	<5
2,2-DICHLOROPROPANE	8260B	µg/L	1	<1	<1	<1
1,1-DICHLOROPROPENE	8260B	µg/L	1	<1	<1	<1
CIS-1,3-DICHLOROPROPENE	8260B	µg/L	1	<1	<1	<1
TRANS-1,3-DICHLOROPROPENE	8260B	µg/L	1	<1	<1	<1
ETHYLBENZENE	8260B	µg/L	0.5	<0.5	<0.5	<0.5
HEXACHLOROBUTADIENE	8260B	µg/L	2	<2	<2	<2
ISOPROPYLBENZENE	8260B	µg/L	1	<1	<1	<1
4-ISOPROPYLTOLUENE	8260B	µg/L	1	<1	<1	<1
METHYLENE CHLORIDE	8260B	µg/L	2	<2	<2	<2
METHYL-TERT-BUTYL ETHER (MTBE)	8260B	µg/L	0.5	<0.5	<0.5	<0.5
NAPHTHALENE	8260B	µg/L	2	<2	<2	<2
N-PROPYLBENZENE	8260B	µg/L	1	<1	<1	<1
STYRENE	8260B	µg/L	1	<1	<1	<1
1,1,1,2-TETRACHLOROETHANE	8260B	µg/L	1	<1	<1	<1
1,1,2,2-TETRACHLOROETHANE	8260B	µg/L	1	<1	<1	<1
TETRACHLOROETHENE	8260B	µg/L	1	<1	<1	<1
TOLUENE	8260B	µg/L	0.5	<0.5	<0.5	<0.5
1,2,3-TRICHLOROBENZENE	8260B	µg/L	2	<2	<2	<2
1,2,4-TRICHLOROBENZENE	8260B	µg/L	2	<2	<2	<2
1,1,1-TRICHLOROETHANE	8260B	µg/L	1	<1	<1	<1
1,1,2-TRICHLOROETHANE	8260B	µg/L	1	<1	<1	<1
TRICHLOROETHENE	8260B	µg/L	1	<1	<1	<1
TRICHLOROFLUOROMETHANE	8260B	µg/L	1	<1	<1	<1
1,2,3-TRICHLOROPROPANE	8260B	µg/L	2	<2	<2	<2
1,2,4-TRIMETHYLBENZENE	8260B	µg/L	1	<1	<1	<1
1,3,5-TRIMETHYLBENZENE	8260B	µg/L	1	<1	<1	<1
VINYL CHLORIDE	8260B	µg/L	1	<1	<1	<1
O-XYLENE	8260B	µg/L	0.5	<0.5	<0.5	<0.5
M,P-XYLENE	8260B	µg/L	1	<1	<1	<1
T-BUTYL ALCOHOL (TBA)	8260B	µg/L	20	<20	<20	<20
DIISOPROPYL ETHER (DIPE)	8260B	µg/L	5	<5	<5	<5
ETHYL-T-BUTYL ETHER (ETBE)	8260B	µg/L	5	<5	<5	<5
T-AMYL METHYL ETHER (TAME)	8260B	µg/L	5	<5	<5	<5

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit
N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.
J: Reported between PQL and MDL.
Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

Dominic Lau
Laboratory Director
Applied P & CH Laboratories

APPENDIX C

GROUNDWATER WELL DEVELOPMENT AND PURGE LOGS

Appendix C-1

Groundwater Well Development Logs

Battelle
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Camp Pendleton

Well Development / Purge Log

Location: **Site 1294**	Well No.:**MW01** Date: 04-22-2005	Project No.: G605504	Page 1 of 1

Equipment:		Personnel: Scott Lowe	
HORIBA U 10 ☐	HORIBA U22 ☐		
S/N:	S/N:		
FID/PHOTO VAC ☐	ORION 290A ☐	EXPOSURE MONITORING	WELL CONDITION
INTERFACE PROBE ☐	OVA 128 ☐	Background:____NA____PPM	Good ■
HORIBA ORP ☐	WATER LEVEL ☐	Reading:____NA____PPM	Fair ☐
			Poor ☐
Total Well Depth (ft bgs): **7.5**	Screen Interval (ft bgs): **2.5-7.5**		
Static Water Level: 3.50	Depth to Product:	Pump Type: Peristaltic ☐	Submersible ■
Water Column: 4.0	Product Layer:	Liquid Ring ☐	Bladder Pump ☐
Well Casing Diameter: 2”		Pump Rate:	
Borehole Diameter:	Multiplier:	Purge Start Time: 0800 HRS	
Low Flow Method ☐		Purge Stop Time: 0810 HRS	
Minimal Purge Sampling ☐		Total volume Purged: 3 Gal.	
Criteria used to stop purging / development: Dry Well ■		Parameter Stabilization ☐	

Time	Water Depth (btoc)	Volume Recovered (gal)	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
										Transcribed from field notes
										Strong organic odor

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Camp Pendleton

Well Development / Purge Log

Location: **Site 1294**	Well No.:**MW02** Date: 04-22-2005	Project No.: G605504	Page 1 of 1

Equipment:		Personnel: Scott Lowe	
HORIBA U 10 ☐	HORIBA U22 ☐		
S/N:	S/N:		
FID/PHOTO VAC ☐	ORION 290A ☐	EXPOSURE MONITORING	WELL CONDITION
INTERFACE PROBE ☐	OVA 128 ☐	Background:_____NA_____PPM	Good ■
HORIBA ORP ☐	WATER LEVEL ☐	Reading:_____NA_____PPM	Fair ☐
			Poor ☐
Total Well Depth (ft bgs): **7.5**	Screen Interval (ft bgs): **2.5-7.5**		
Static Water Level: 3.60	Depth to Product:	Pump Type: Peristaltic ☐	Submersible ■
Water Column: 3.9	Product Layer:	Liquid Ring ☐	Bladder Pump ☐
Well Casing Diameter: 2”		Pump Rate:	
Borehole Diameter:	Multiplier:	Purge Start Time: 0830 HRS	
Low Flow Method ☐		Purge Stop Time: 0840 HRS	
Minimal Purge Sampling ☐		Total volume Purged: 5.5 Gal.	
Criteria used to stop purging / development: Dry Well ■		Parameter Stabilization ☐	

Time	Water Depth (btoc)	Volume Recovered (gal)	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
										Transcribed from field notes
										Strong organic odor

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Camp Pendleton

Well Development / Purge Log

Location: **Site 1294**	Well No.:**MW03** Date: 04-22-2005	Project No.: G605504	Page 1 of 1

Equipment:		Personnel: Scott Lowe	
HORIBA U 10 ☐	HORIBA U22 ☐		
S/N:	S/N:		
FID/PHOTO VAC ☐	ORION 290A ☐	EXPOSURE MONITORING	WELL CONDITION
INTERFACE PROBE ☐	OVA 128 ☐	Background:____NA____PPM	Good ■
HORIBA ORP ☐	WATER LEVEL ☐	Reading:____NA____PPM	Fair ☐
			Poor ☐
Total Well Depth (ft bgs): **7.5**	Screen Interval (ft bgs): **2.5-7.5**		
Static Water Level: **5.35**	Depth to Product:	Pump Type: Peristaltic ☐	Submersible ■
Water Column: **2.15**	Product Layer:	Liquid Ring ☐	Bladder Pump ☐
Well Casing Diameter: **2”**		Pump Rate:	
Borehole Diameter:	Multiplier:	Purge Start Time: **0850** HRS	
Low Flow Method ☐		Purge Stop Time: **0900** HRS	
Minimal Purge Sampling ☐		Total volume Purged: **3** Gal.	
Criteria used to stop purging / development: Dry Well ■		Parameter Stabilization ☐	

Time	Water Depth (btoc)	Volume Recovered (gal)	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
										Transcribed from field notes
										Strong organic odor

Appendix C-2

Groundwater Sampling Purge Logs

Battelle
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Well Development / Purge Log

MCB CAMP PENDLETON
SITE 1294

Location: CAMP PENDLETON | Well No.: MW-01 | Date: 5-6-2005 | Project No.: 66005504-31, T.O.003 | Page 1 of 1

Personnel: SCOTT LOWE

Equipment:

HORIBA U 10	☒	HORIBA U22	☐
S/N:		S/N:	
FID/PHOTO VAC	☒	ORION 290A	☐
INTERFACE PROBE	☒	OVA 128	☐
HORIBA ORP	☐	WATER LEVEL	☐

EXPOSURE MONITORING
Background: ND PPM
Reading: ND PPM

WELL CONDITION
Good ☒
Fair ☐
Poor ☐

Total Well Depth (ft bgs): 7.5' | Screened Interval (ft bgs): 2.5'-7.5'
Static Water Level: 3.92' | Depth to Product: —
Water Column: 3.58' | Product Layer: —
Well Casing Diameter: 2" | Multiplier:
Borehole Diameter:
Low Flow Method ☒
Minimal Purge Sampling ☐

Pump Type: Peristaltic ☐ Liquid Ring ☐ Submersible ☐ Bladder Pump ☒
Pump Rate: ~ 0.0275 GPM
Purge Start Time: 1332 HRS
Purge Stop Time: 1342 HRS
Total volume Purged: ~ 0.275 Gal. + 2,500 ml SAMPLE
Parameter Stabilization ☒

Criteria used to stop purging / development: Dry Well ☐

Time	Water Depth (btoc)	Volume Recovered (gal)	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
										SET PUMP @ 1030
1335	3.97	0.10	7.90	1.2	3.0	1.7	23	0.1		• 1,000 ml x 2 : 8015B (TPH-D/G)
1338	4.04	0.20	8.40	1.2	4.0	1.8	23	0.1		• 500 ml x 1 w/ HNO_3 : 6020 (TOT. Pb)
1340	4.10	0.25	8.00	1.2	4.0	1.5	22	0.1		
1342	4.14	0.275	8.70	1.2	4.0	1.5	22	0.1		
										Sample Collected: 1345 HRS

Field Team Leader Signature

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Well Development / Purge Log

MCB CAMP PENDLETON
SITE 1294

Location: CAMP PENDLETON | Well No.: MW-02 | Date: 5-6-2005 | Project No.: 61605504-31; T.O. 003 | Page 1 of 1

Personnel: SCOTT LOWE

Equipment:

HORIBA U 10	☒	HORIBA U22	☐
S/N:		S/N:	
FID/PHOTO VAC	☒	ORION 290A	☐
INTERFACE PROBE	☒	OVA 128	☐
HORIBA ORP	☐	WATER LEVEL	☐

EXPOSURE MONITORING
Background: ND PPM
Reading: ND PPM

WELL CONDITION
Good ☒
Fair ☐
Poor ☐

Total Well Depth (ft bgs): 7.5' | Screened Interval (ft bgs): 2.5'-7.5'
Static Water Level: 3.24' | Depth to Product: —
Water Column: 4.26' | Product Layer: —
Well Casing Diameter: 2" | Multiplier:
Borehole Diameter:
Low Flow Method ☒
Minimal Purge Sampling ☐

Pump Type: Peristaltic ☐ Liquid Ring ☐ Submersible ☐ Bladder Pump ☒
Pump Rate: ~0.0097 GPM
Purge Start Time: 1437 HRS
Purge Stop Time: 1453 HRS
Total volume Purged: 0.155 Gal. + 15,770 ml (SAMPLES)
Parameter Stabilization ☒

Criteria used to stop purging / development: Dry Well ☐

Time	Water Depth (btoc)	Volume Recovered (gal)	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
										MS/MSD COLLECTED
										SET PUMP @ 1030
1440	3.26	0.075	8.3	0.40	26.0	9.8	24	0.0		SAMPLES COLLECTED:
1443	3.29	0.10	8.5	0.40	3.0	2.1	24	0.0		1000 ml x 6: 8082 (PCBs)
1446	3.30	0.125	8.6	0.40	3.0	1.9	24	0.0		1000 ml x 6: 8015B (TPH-D/G)
1448	3.31	0.135	8.6	0.40	4.0	1.9	24	0.0		VOA x 9: 8260B (VOCs)
1450	3.32	0.145	8.6	0.40	3.0	1.8	24	0.0		1000 x 3: 6020 (22 METALS)
1453	3.32	0.155	8.6	0.40	3.0	1.8	24	0.0		500 x 3: 6020 (TOTAL Pb)
										Sample Collected: 1455 HRS

Field Team Leader Signature

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Well Development / Purge Log

MCB CAMP PENDLETON
SITE 1294

Location: CAMP PENDLETON | Well No.: MW-03 | Date: 5-6-2005 | Project No.: G6005504-31; T.O.003 | Page 1 of 1

Personnel: SCOTT LOWE

Equipment:

HORIBA U 10	☒	HORIBA U22	☐
S/N:		S/N:	
FID/PHOTO VAC	☒	ORION 290A	☐
INTERFACE PROBE	☒	OVA 128	☐
HORIBA ORP	☐	WATER LEVEL	☐

EXPOSURE MONITORING
Background: ND PPM
Reading: ND PPM

WELL CONDITION
Good ☒
Fair ☐
Poor ☐

Total Well Depth (ft bgs): 7.5' | Screened Interval (ft bgs): 2.5'-7.5'
Static Water Level: 5.30' | Depth to Product: —
Water Column: 2.20' | Product Layer: —
Well Casing Diameter: 2" | Multiplier:
Borehole Diameter:

Pump Type: Peristaltic ☐ Liquid Ring ☐ Submersible ☐ Bladder Pump ☒
Pump Rate: ~0.025 GPM
Purge Start Time: 1642 HRS
Purge Stop Time: 1652 HRS
Total volume Purged: 0.25 Gal. + 1500mL (Samples)

Low Flow Method ☒
Minimal Purge Sampling ☐
Parameter Stabilization ☒
Criteria used to stop purging / development: Dry Well ☐

Time	Water Depth (btoc)	Volume Recovered (gal)	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
										PUMP PLACED @ 1100
1645		0.10	8.5	0.9	53.0	0.0	22	0.0		SAMPLES COLLECTED:
1648		0.15	8.6	1.0	57.0	0.0	21	0.0		• 1x 1000mL x2: 8015B (TPH-E/D-O)
1650		0.20	8.6	1.1	60.0	0.0	21	0.0		• 1x 500mL: 6020 (TOTAL Pb)
1652		0.25	8.6	1.1	60.0	-0.1	21	0.0		
										Sample Collected: 1654 HRS

Field Team Leader Signature

APPENDIX D

SOIL BORING AND WELL INSTALLATION PERMIT

PERMIT #LMON102947
A.P.N. #101-520-15
EST #H05939-168

COUNTY OF SAN DIEGO
DEPARTMENT OF ENVIRONMENTAL HEALTH
LAND AND WATER QUALITY DIVISION

MONITORING WELL AND BORING CONSTRUCTION AND DESTRUCTION PERMIT

SITE NAME: SITE 1255 & SITE 1294 CAMP PENDLETON

SITE ADDRESS: MARINE CORPS BASE CAMP PENDLETON CA 92055

PERMIT FOR: **8 GROUNDWATER MONITORING WELLS & 6 BORINGS**

PERMIT APPROVAL DATE: MARCH 2, 2005

PERMIT EXPIRES ON: JUNE 30, 2005

RESPONSIBLE PARTY: AC/S ENVIRONMENTAL SECURITY

PERMIT CONDITIONS:

1. Wells must have a **minimum 3-foot concrete surface seal**. The surface seal shall consist of concrete able to withstand the maximum anticipated load without cracking or deteriorating. The concrete should meet Class A specifications of a minimum 4000-pound compressive strength.

2. All water and soil resulting from the activities covered by this permit must be managed, stored and disposed of as specified in the SAM Manual in Section 5, E- 4. (**http://www.sdcounty.ca.gov/deh/lwq/sam/manual_guidelines.html**). In addition, drill cuttings must be properly handled and disposed in compliance with the Stormwater Best Management Practices of the local jurisdiction.

3. Within 60 days of completing work, submit a well construction report, including all well and/or boring logs and laboratory data to the Well Permit Desk. This report must include all items required by the SAM Manual, Section 5, Pages 6 & 7.

4. This office must be given 48-hour notice of any drilling activity on this site and advanced notification of drilling cancellation. Please contact the Well Permit Desk at 619) 338-2339.

NOTE: **This permit does not constitute approval of a work plan as defined in Section 2722 of Article 11 of C.C.R., Title 23. Work plans are required for all unauthorized release investigations in San Diego County.**

APPROVED BY: Carol Spangenberg DATE: 3.2.2005
CAROL SPANGENBERG

NOTIFIED: V.M 3-2-05
AC Fax

DEH:SAM-9075 (4/03)

APPENDIX E

SITE SURVEY DATA

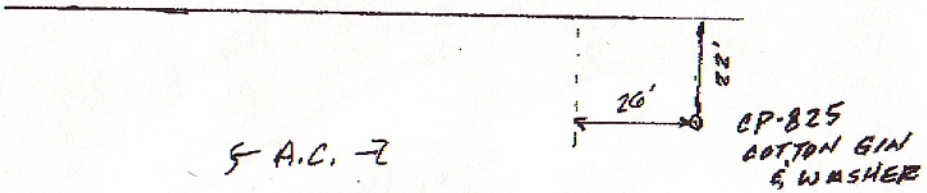
Pt. No.	Field Pt. Name	Field Pt. Class	Survey Date	Latitude	Longitude	X-Y Method	X-Y Datum	X-Y Acc Value	GPS Equip Type	Elevation Casing	Elevation Rim	Elev Method	Elev Datum	Elevation Acc Value
7130	1294-MW03	MW	5/7/2005	33.3202013	-117.3131477	CONV	NAD83	6		289.74	290.1	TRIG	NAVD88	6
7131	1294-MW01	MW	5/7/2005	33.3201085	-117.3130861	CONV	NAD83	6		289.47	289.97	TRIG	NAVD88	6
7132	1294-MW02	MW	5/7/2005	33.3201073	-117.3131769	CONV	NAD83	6		289.38	289.93	TRIG	NAVD88	6
7133	1294-SB04	BH	5/7/2005	33.3201082	-117.3132347	CONV	NAD83	6			289.77	TRIG	NAVD88	6
7134	1294-SB05	BH	5/7/2005	33.3200472	-117.3131794	CONV	NAD83	6			294.79	TRIG	NAVD88	6
7155	1255-MW01	MW	5/7/2005	33.3179626	-117.3143088	CONV	NAD83	6		393.58	394.14	TRIG	NAVD88	6
7156	1255-SB02	BH	5/7/2005	33.317926	-117.3143518	CONV	NAD83	6			394.18	TRIG	NAVD88	6
7157	1255-SB03	BH	5/7/2005	33.3180161	-117.314231	CONV	NAD83	6			393.71	TRIG	NAVD88	6
7158	1255-SB04	BH	5/7/2005	33.317914	-117.3142725	CONV	NAD83	6			392.66	TRIG	NAVD88	6
7159	1255-SB05	BH	5/7/2005	33.3179625	-117.3141399	CONV	NAD83	6			391.78	TRIG	NAVD88	6
7160	1255-SB06	BH	5/7/2005	33.3180125	-117.3145634	CONV	NAD83	6			396.53	TRIG	NAVD88	6
7161	1255-SB07	BH	5/7/2005	33.3181024	-117.3143338	CONV	NAD83	6			393.75	TRIG	NAVD88	6
7162	1255-SB08	BH	5/7/2005	33.31789	-117.3142596	CONV	NAD83	6			392.35	TRIG	NAVD88	6
7195	1313-MW01	MW	5/7/2005	33.3000753	-117.3139059	CONV	NAD83	6		362.42	362.87	TRIG	NAVD88	6
7196	1313-RW01	MW	5/7/2005	33.3001842	-117.3139688	CONV	NAD83	6		363.68	364.12	TRIG	NAVD88	6
7197	1313-MW03	MW	5/7/2005	33.3000977	-117.3140406	CONV	NAD83	6		364.39	364.85	TRIG	NAVD88	6
7198	1313-MW02	MW	5/7/2005	33.3001491	-117.3140255	CONV	NAD83	6		363.98	364.3	TRIG	NAVD88	6
7199	1313-SB02	BH	5/7/2005	33.3002363	-117.3139591	CONV	NAD83	6			363.49	TRIG	NAVD88	6
7200	1313-SB03	BH	5/7/2005	33.3002142	-117.3139067	CONV	NAD83	6			363.31	TRIG	NAVD88	6
7201	1313-SB04	BH	5/7/2005	33.3002302	-117.314001	CONV	NAD83	6			364.16	TRIG	NAVD88	6
7202	1313-SB06	BH	5/7/2005	33.3001437	-117.3139427	CONV	NAD83	6			363.27	TRIG	NAVD88	6

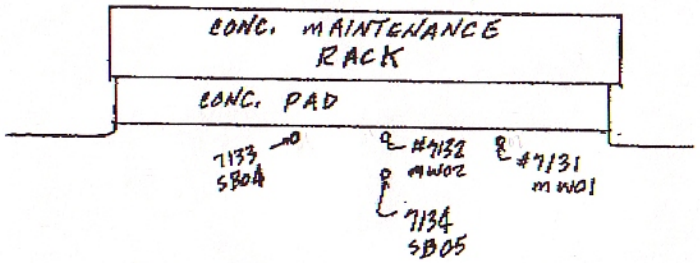
1" = 40' ±

BATTELLE/
CAMP PENDLETON
MON. WELLS/
SOILS BORINGS

SITE 1294

5-7-05
PG/RCB





PT No.	Designation	Lid Elev.	Minus	Casing Elev.	Description	Northing	Easting	Latitude (Dec. Deg.)	Longitude (Dec. Deg.)
7130	1294 MW03	290.10	-0.36	289.74	2" PVC	2061789.109	6236903.919	33.3202013	-117.3131477
7131	1294 MW01	289.97	-0.50	289.47	2" PVC	2061755.159	6236922.392	33.3201085	-117.3130861
7132	1294 MW02	289.93	-0.55	289.38	2" PVC	2061755.018	6236894.650	33.3201073	-117.3131769
7133	1294 SB04	289.77	-	-	GND.	2061755.526	6236876.996	33.3201082	-117.3132347
7134	1294 SB05	294.79	-	-	GND.	2061733.144	6236893.649	33.3200472	-117.3131794

APPENDIX F

MANIFEST FOR TRANSPORT AND DISPOSAL OF INVESTIGATION-DERIVED WASTE

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: C.A.2.1.7.0.0.2.3.5.3.3 | Manifest Document No.: 2.5.0.8.4 | 2. Page 1 of 1

3. Generator's Name and Mailing Address: USMC AC/S ENVIRO. SECURITY
PO Box 555008
CAMP PENDLETON, CA 92055

4. Generator's Phone: (760 725-3617 ATTN: TRACY SAHAGUN

5. Transporter 1 Company Name: EFR ENVIRONMENTAL SERVICES, INC. | 6. US EPA ID Number: C A R 0 0 0 0 1 1 2 0 5 | A. Transporter's Phone: 619-722-6781

7. Transporter 2 Company Name | 8. US EPA ID Number | B. Transporter's Phone

9. Designated Facility Name and Site Address:
DOME ROCK INDUSTRIES, INC.
3125 W. DOME ROCK RD.
QUARTZSITE, AZ 85346

10. US EPA ID Number: A Z R 0 0 0 0 3 5 9 1 5 | C. Facility's Phone: 928 927-7688

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. NON-HAZARDOUS WASTE SOLID	053 ~~057~~		22.00	P
b. NON-HAZARDOUS WASTE LIQUID	003	DM	0.165	G
c.				
d.				

D. Additional Descriptions for Materials Listed Above: 11A. ACCEPTANCE# ~~(SOIL CUTTINGS)~~ 4321PW370
11B. ACCEPTANCE# (PURGE WATER) 51675C239
SITE NO: 1299, 1255, 1373

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
ALWAYS WEAR APPROPRIATE P.P.E. AND USE SAFE HANDLING METHODS.
24 HR. EMERGENCY NUMBER 1-800-244-1202/619-722-6781 *EFR*

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Margo Williams	Margo Williams	06	06	05

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Douglas Ford	Douglas Ford	06	06	05

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR — TRANSPORTER — FACILITY

ORIGINAL - RETURN TO GENERATOR